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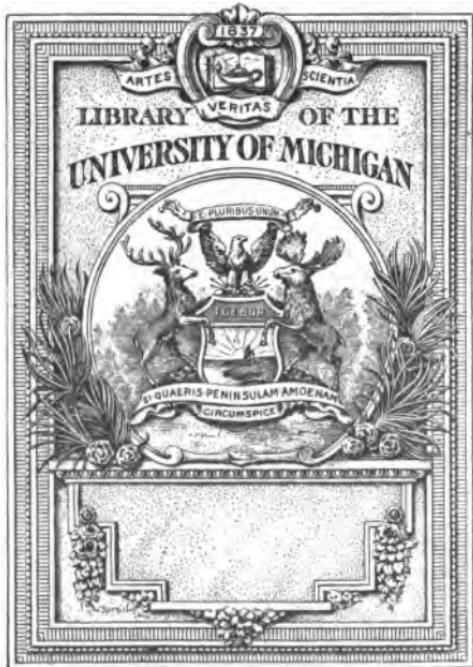
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ON BECOMING BLIND



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DR. ÉMILE JAVAL ON HIS TANDEM TRICYCLE.

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ON BECOMING BLIND

ADVICE FOR THE USE OF PERSONS
LOSING THEIR SIGHT

BY

DR. ÉMILE JAVAL

*Honorary Director of the Ophthalmic Laboratory of the
École des Hautes Études
Member of the Academy of Medicine*

TRANSLATED BY

CARROLL E. EDSON, A.M., M.D.

New York
THE MACMILLAN COMPANY

LONDON: MACMILLAN & CO., LTD.

1905

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Set up and electrotyped. Published February, 1905.

**Norwood Press
J. S. Cushing & Co. — Berwick & Smith Co.
Norwood, Mass., U.S.A.**

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TRANSLATOR'S PREFACE

THERE is so much of help and suggestion in Dr. Javal's little volume that it has been a labor of love to translate it, in the hope that it may bring this usefulness within the reach of those afflicted who cannot read the original. It has not been possible to convey all the charm of style of Dr. Javal's text, and somehow the pathos between the lines is lost in the translation. The appendix on the means of accelerating reading and writing has not been rendered into English, as it dealt with phonography of the French language only. I have added also to the last chapter a list of similar useful addresses in this country.

DENVER, COLORADO,
September 20, 1904.

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INTRODUCTION

HAVING lost my sight suddenly at a relatively late age (I had just entered my sixty-second year), one of my first cares was to inquire what might be done to live with the least possible evil with my infirmity. Great was my surprise to find nowhere any collection of advice on this matter. In short, the attention of the friends of the blind, or typhlophiles, has been concentrated either on the bringing up and instruction of the blind young or upon charity organization for the blind poor.

What further explains the lack of such publications as I wished is, that the sudden and complete loss of sight is a relatively infrequent misfortune. Adults whose vision fails little by little gradually accustom them-

selves to withdraw more or less completely from affairs. Some soon resign themselves to passing their life in the corner and to drop out of the world of the living ; others, more energetic, but much less numerous, continue, as far as possible, their former mode of life with the aid of others' eyes. Without going back to Homer, we have seen Huber, become blind at the age of twenty-seven, assisted by a faithful servant, continue the work of Réaumur on the habits of bees ; Augustin Thierry, blind at thirty, not abandon his historical researches, but dictate his "Récits des temps mérovingiens" ; Milton, losing his sight at fifty, dictate to his daughter his celebrated poem of "Paradise Lost" ; Rodenbach play an important part in the Belgian parliament ; Fawcett, blinded at twenty-five, change, thanks first to a remarkable family collaboration, his career of a lawyer for that of a writer, win an election to the House of Commons, and become postmaster-general. These examples, and others less illustrious, suffice to prove that blindness, seizing a

man in full activity, does not condemn him to inactivity, especially if, the loss of sight being gradual, he can likewise accommodate himself little by little to the new condition set him.

It is by long experience that the persons who live with a blinded one learn to spare him difficulties with a devotion often admirable, a devotion whose burden I would like to help lessen.

I set forth in the pages which follow the results of my experience and researches; I ask the indulgence of competent persons, for I am only a parvenu in blindness.

The cost will prevent many of my companions in misfortune from profiting by a large part of my advice. As my work will obviously not be read by the blind, but by their relatives, nothing obliges these to acquaint them with all the chapters; each will take what he can. I write for the family of the blind; it is for them to spare their protégé the regret of being unable to procure costly helps, such as the tandem-tricycle or the phonograph.

INTRODUCTION

It is perhaps more especially to my oculist *confrères* that it will fall to cull from this volume the advice which they may use to the profit of their unfortunate patients. I have met more than one blind man who spoke in very bitter terms of the care he received in the last period of his malady.

I therefore beg my *confrères* to resist the tendency — they call it humane and I call it barbarous — to leave these patients in hope while amusing them with injections of strychnine, sittings of electricity, or useless internal treatments, the employment of which, even if given gratuitously, does not increase the reputation of him who makes use of them. To give, by a placebo treatment, consolation to an incurable, is to prevent him from arranging his life in anticipation of the fatal outcome. It seems to me more humane to do for the blind what I wish had been done for me, and to prepare them little by little for their fate. If, for example, you foresee that the patient will one day be forced to resort to Braille writing, is it not a duty to use the

little sight left him to teach him the first elements of this process?

More particularly intended to serve men of the liberal professions who have just made the "leap in the dark," the pages which follow would never have been written if this misfortune had not befallen me, and if, as I hope, they serve to render easier some ill fortune like mine, fate will have given me one precious consolation.

5 BOULEVARD LATOUR-MAUBOURG,
PARIS, June, 1903.

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ON BECOMING BLIND

ON BECOMING BLIND

I

BONDAGE AND FREEDOM

"If we ardently desire sight, it is not to enjoy the delight of faces and to distinguish colors, but much more to be freed from the thousand restraints which blindness throws around us everywhere—in the street, in the house, at the table. It is to escape from the dependence which, even if friendly, weighs upon us."

THE above lines are by M. Guilbeau, professor at the National Institution for the Young Blind and founder of the Valentin Haiuy Museum, an eminent man whose counsels have been of the greatest use to me.

If these valuations are true for those who, like M. Guilbeau, lost their sight in childhood, they are very much more so for those who during an already long life have had

the use of their eyes. One of the phases of the bondage from which the blind escapes with difficulty is the impossibility, in which he often finds himself, of controlling by himself the statements of another. If he cannot have absolute confidence in the veracity of those about him, life becomes intolerable for him. Never lie to a blind man, be it with the best intent in the world ; because, to render him a passing service, you will have killed his confidence, and in consequence his security.

It is wretched to run to another for the most unimportant acts. "Nobody ever understands one," said Becque. Each of us has always, even as concerns his most intimate friend, his "secret tribunal" which dictates, in daily life, small actions, insignificant perhaps, but whose changes it is not pleasant to have discussed. And if, himself, the blind has nothing to hide from his relatives, he may wish to keep to himself the confidences of another.

At first it was impossible for me to keep the secret of my correspondence with those

who had sight; I have gradually succeeded in doing it, and you will see how in Chapter XVII.

In society the bondage of the blind is almost constant; he does not choose his interlocutor, the other forces himself on him. It is impossible to escape from a bore, to join a congenial group, or to take aside one who, often with discreetness, does not come up to rescue him from an unconscionable dun.

For most services, paid help is preferable. For example, a paid reader reads what we wish, rereads any passage we wish to remember, skips a chapter which does not interest us. He spares us his comments. If we dictate a letter to him, he does not interrupt to give us his advice. But, docile slave, he ends sometimes by making himself indispensable, and may become, to speak truly, the household tyrant, the Cerberus who drives off those who shelter him. I have known one blind man without a family who was, to the time of his death, the slave of his secretary and his cook, still happy in

the little independence left him of reciprocal hatred of these two persons.

From the time of Antigone, we have seen women, daughters of the blind, make entire abnegation of themselves: Whatever satisfaction they may find in thus immolating themselves, if we may admire them, yet it is wise to blame them. We ought to tell them the sad story of the English poet whose sister was his constant companion; when she died, he was more helpless than when he became blind. Would she not have done better to have married and left him some nephews? And that other admirable mother, consecrating herself wholly to the education of an only daughter,—was she right in neglecting other duties?

The blind must not abuse such devotion by being capricious in the distribution of his time. He must put upon himself the restraint of the greatest possible regularity of hours; and every time in this ordered life that he wishes to interpose any project, he ought to make it known as soon as conceived so that every one may plan accordingly.

All efforts should tend to give the blind the maximum of freedom and independence compatible with his condition, by providing him with the means of doing for himself as many things as possible. The more he knows how to do alone, the more he will act for himself and the more content he will be, while less of a care to another.

One kind of thoughtfulness to which the blind is extremely sensitive consists in maintaining around him the most perfect and scrupulous order, so that he is free to find things for himself instead of having to ask for them. He should, as far as possible, sort his papers for himself, so as never to be at the mercy of a particular person when he has need to find them again.

Since the loss of freedom is the worst of the consequences of blindness, when one loses his sight the first thing to do is to hasten to make him familiar with all the procedures which allow him to act for himself; and it is the setting forth of these means which is the object of the present work.

II

REPLACING SIGHT BY THE OTHER SENSES

ACCORDING to a widespread opinion, the loss of one sense has the effect of increasing the acuteness of the others: nothing is more false. It is opposed to the theory of sensations and contrary to experience to hope, for example, that a blind person, by dint of practice, will end by hearing a watch farther off than he would have heard it at the moment he lost his sight.

This is not to say that the blind does not reap a useful benefit — even very useful — from certain sensations which escape the seer. He learns — and he must learn — to bring his attention to bear upon many things which, for those who see, are of secondary importance or even negligible. For example, when I could see, it might wholly escape my notice whether a visitor were gloved. At present I do not fail to shake

hands with every arrival, before having him sit down. I know immediately if he is gloved or not, and the difference of hands informs me, when I combine with it the voice and the height from which it comes, of the sex, the build, and in some measure of the age and the social condition, of the speaker. The variety of handclasps is infinite, so that I learned, without too great surprise, that a person both deaf and blind, and who consequently comes into relation with another only by the hand, sometimes recognizes a handshake after several years' interval. The odor helping, I have succeeded in promptly turning off a beggar whose breath was loaded with alcohol. There is not brought out any refinement of the auditory, tactile, and olfactory senses, but greater keenness in the interpretation of the information furnished by these senses. The blind from birth are past masters in this kind of exercise, and I would give to my brothers in recent blindness some pointers drawn from the experience of their predecessors.

For the blind, hearing is almost the sole means of recognizing distant objects. It is desirable therefore to avoid useless noises, in order to leave more action to the lesser noises which reveal what is going on about him. A window open upon a paved and busy street does not allow him to recognize, by the sound of the step, the rustle of skirts, etc., who enters the room, to hear the clock, to tell what is going on in the next room.

Since no one can tell with exactness whence a sound comes, but since this power of recognition can be improved by practice, for example, in learning to turn the head so as to profit by the difference of impression made upon the two ears according as one or the other is turned towards the origin of the sound, it is useful to take a blind man often to the theatre, preferably to seats in front, near the stage, and to tell him the chief movements of the actors. If he has a seat at one side, the blind person cannot get any idea relative to the movement of the players. Theatrical represen-

tations are likewise excellent practice for learning to classify voices according to their timbre and to note their peculiarities.

I will say here that to interest the blind at a play it is necessary, so far as possible, to give him first an idea of the piece by a prior analysis, and then, when the curtain goes up on each act, to tell him the stage settings and the names of the persons in the scene.

To recognize a speaker by his voice is a faculty the more important for the blind to develop, as he must make use of it in order not be too much bewildered in a gathering of several persons.

An experienced blind man can tell, I am informed, by the sound of his step whether the ground is dry or wet, if he is walking near or far from a wall, if he is entering a large or small sized room.

To inform himself by the ear such a blind person, as I could cite, knows how to make use of sounds which he makes himself,—for example, the sound produced when he strikes the ground with his cane, or when he makes

with his lips a little dry, sharp sound like that of a kiss. I do not know how far adults can make use of these means.

In every case there is an auditory impression which improves usefully and rapidly. It is that of the shades of expression which betray an involuntarily expressed sentiment. Deprived of the evidences which the expressions of the face and the involuntary gestures of his interlocutors give, the blind is only the more attentive to the intonations; and he may draw true profit from the art of listening, in which he ought to try to become an expert.

Along with hearing, smell may give some information about objects which are beyond the reach of the blind person's hands. I have never seen that there was any advantage in methodically exercising smell. Without being told, blind men in whom this sense is developed use it to recognize a store when passing. He who would obtain from smell all the information possible ought to refrain from smoking and taking snuff. Tobacco destroys smell in a very marked degree.

REPLACING SIGHT BY OTHER SENSES 11

Finally, touch, of which no one is wholly deprived, is for the blind the most precious of his senses ; and it is possible to increase by training, not its sensitiveness, but its usefulness.

One who sees, in carrying his finger over Braille writing, is unable to feel the arrangements of the points which a blind person recognizes without hesitation. It is not that the finger of the seer is less sensitive, but because he does not know how to feel. This distinction is not a quibble. I will give as proof that, having made the mistake at first of using only the forefinger of my right hand for reading Braille, it is much more difficult for me to read with my left index finger: and yet, far from being increased, the sensitiveness of my right index finger has been very noticeably diminished by the rubbing. Especially when I have read much under this finger the points seem soft and cottony, while they appear almost pricking to the left forefinger. In spite of this greater sensitiveness, the left finger is much less handy for reading than the right.

Other blind persons have noticed the same fact.

The most practised blind reader will not always recognize a letter of Braille writing when he puts his finger on that letter. The points and their respective arrangement are perceived easily only through the friction which they exert upon the skin of the finger, and for this perception to be sharp the rubbing must be neither too slow nor too fast. One of the secrets wholly subconscious to the blind reader is to move the finger with the greatest speed compatible with perception of the points, pressing on just enough not to fatigue the tactile sensitiveness. There was here a whole physiologic study to undertake, similar to that which I had before made upon reading among those who have sight. The blind who are employed at manual labor often find it an advantage to use for reading the index finger of the left hand, the skin of which is less thickened.

These observations lead me to think that, when he knows his letters, the adult who

wishes to practise reading Braille will find every advantage by reading at first works which he already knows or which he has had read to him previously. In an hour one will read aloud to him more than he will read in a week, and he ought to read as rapidly as possible, guessing at the words so as not to stop moving the finger with the speed most favorable to the touch.

In institutions for the young blind they do not fail to put into the children's hands numerous objects to teach them forms : there is need to do nothing of this kind for the blind who has seen. But for the "representation" of forms by sketches, geographical maps, etc., there is some advantage in special teaching material, and an excellent use of idle moments is to run the fingers over one of these relief maps which are used to teach blind children.

With a similar idea they make in Germany anatomical models for the education of blind masseurs, upon which the nerves and vessels are marked in relief.

The cane which the blind makes use of

may rightly be considered as a prolongation of the tactile sense. This long feeler is much more delicate if the cane is replaced by a light wand. I am never without the blackthorn switch which was given me by my distinguished *confrère*, Dr. Vosy of Choisy-le-Roi. It serves me, so to speak, as an anterina, and saves me from carrying my hands stretched out when I go about. About twenty centimetres from the handle there is attached a cord of the same length, ending in a button or a hook which fastens in a buttonhole of my coat. Owing to this contrivance, I unhook the wand almost solely for walking. It is free enough to be used with the left hand without unfastening. Besides, I avoid breaking it when I sit down carelessly, which did happen when the button was attached to the end by a short cord. Whether it be in a crowd, as on leaving the theatre, or on a call in an unfamiliar room, I walk with this stick ahead of me, moving it back and forth horizontally, the ferrule near the ground. In the street, on the arm of an untried friend, especially of a lady, I

feel much more secure if I have a cane in my hand with which to touch obstacles at need. I believe, too, that its use warns passers of the approach of a blind person and leads them to make room. However, the fine way appears to be to go about without a cane, and the old pupils of the National Institute of Paris try to distinguish themselves by this from the less expert blind.

To sum up, the blind, to guide them, make use of all other senses save sight, including also at times a sixth sense, which will be considered in Chapter XXV.

III

HOUSEHOLD OCCUPATIONS

LATHE and carpentry work are not beyond the reach of the blind; and I know some who are happy and proud in making wooden and pasteboard boxes and who do bookbinding: these are harmless pleasures dear to those born blind. Having practised, in my childhood, turning and other manual arts, I should not have the courage to spend much time making, rather badly, useless articles. He who loses his sight when relatively old has neither the patience nor the naïve illusions of those born blind who take pleasure in manual occupations ; he has not had the time to become reconciled to the excessive slowness in everything which is forced upon those who work without seeing.

The blind may make himself useful by contributing to the household work, particularly in families of small means. It would

take too much space to reproduce here all that was written me on this subject by M. Bonnet, of Toucy (Yonne), who after having had very bad sight became wholly blind at the age of thirty-two. Few of our companions will carry their skill as far as my correspondent, who does not fear, for example, to light and keep up the fire, and who assumes the greater part of the work of keeping the house tidy. He has gone so far as to invent a blacking easy for him to handle, the formula of which he will send to those who ask it. His greatest pleasure is to busy himself with the care of little children, being their companion as they grow up and taking them as guides on errands which are beyond their years.

However that may be, nothing prevents the blind from sawing and splitting the kindling wood, laying the fires in the grates, going to the cellar for wine, uncorking the bottles, laying and clearing the table, washing and putting away the dishes, shelling the beans, making the beds, sweeping the chambers, and cleaning the area yard. All

o

this calls for only a little practice and a few tricks of the hand.

For instance, to make up a bed, the blind person, after putting two chairs side by side facing each other to hold the bedding, takes care before taking off each sheet to tie a knot in it so as to be sure when he puts it back not to place at the head of the bed the part of the sheet which had been at the foot. For sweeping he makes a good clear space by carrying successively all the chairs to that part of the room where he is not working.

In the country, while the rest of the family is away at work in the fields, he can distribute the fodder to the cattle and keep the house. I have been told of one born blind who takes great satisfaction in bottling his own wine; so much the better for him, but as it is impossible for him to fill the bottles clear to the top, the work is rather troublesome.

This last instance seems to me well chosen to show that often the household duties which the blind can fulfil serve only to give

him the sense, or illusion, of being useful. That in itself is something.

For children who become blind very young, household occupations are an excellent form of primary education ; a mother will easily resolve to have the child shell the beans. And right here I urge upon those who have the care of very young blind children to isolate these children as little as possible. In spite of the dangers, much more imaginary than real, of so doing, they ought to send the little ones to the dame-school if there is one in the neighborhood and even to the primary school. For them the inability to see is made up, in a measure, by the absence of distractions, and, if the teachers put ever so little good will into it, the children learn something, and above all they are filled with the desire to learn. If, besides, you get some "pointers" from a blind school, you can put the child in the way at home of profiting by the teachings he will receive at the special schools. For every reason the little blind child must not be constantly tied to its mother's apron strings.

IV

PROFESSIONAL OCCUPATIONS

I KNOW no better way to begin this chapter than by translating a passage from a letter sent me by M. Riggénbach, himself blind and Professor of Theology at the University of Bâle. "I am convinced," writes M. Riggénbach, "that the adult becoming blind ought to continue in his profession in every case in which it is possible, and not to allow himself to be stopped by the difficulties at the start. If he is obliged to change his work, he must choose a new one which will put certain obligations on him and not leave him the choice constantly of working or doing nothing.

"The blind, moreover, can find satisfaction in existence only if he does not live for himself alone; if he can have the assurance of being a useful member of society and of contributing his share to the general good.

"It is a mistake to limit one's efforts to distracting the blind. On the contrary you must engage them in work and in using all their energies, but they must not expect to get exactly the same situations as those who see. For all this, it may happen that the blind has a very pleasant and very agreeable lot. For myself I am well satisfied to have been able to keep on with my studies and to have reached a university position."

It is impossible to say more.

However, I ought to say that, as M. Rigganbach lost his sight at the age of fifteen, his position was somewhat peculiar. He became blind just about the time when a man chooses his career.

For those who become blind later on the choice of a career is no longer to be made. It is then a question of making a decision ; it is necessary to brace oneself either to keep on, if this be possible, in the former occupation, or to change suddenly one's direction, taking account, in the choice of the new route, both of the knowledge pre-

viously acquired and of external circumstances. This is good advice to follow, not only for those who have just lost their sight, but especially for those who are threatened with blindness.

Thus, one of my correspondents, M. Camille Lemaire, an architect, finding himself threatened with blindness, devoted himself to the history of architecture. Otherwise in this line of work he could only have stayed blind. It is important not to fall into the absurd error of having one about to lose his sight spend weeks or months of rest; he ought as far as possible to be left to his occupation and usual resources.

Another of my correspondents, M. Sommer, adapted his conduct very fully to the above indications, and added to them something more of a very ingenious turn. He has been able to make a profit out of his blindness by starting at Bergedorf, near Hamburg, a kind of homelike boarding house for the blind of both sexes and all ages who may have the means of paying for his

hospitality. Dr. Sommer first spent a year at the Institution for the Blind at Hamburg, to familiarize himself with methods in use at establishments of this kind; then, equally to increase his special teaching knowledge and to perfect himself in the use of modern languages, he made, before founding his establishment at Bergedorf, a rather long stay in England and in France. You will see in Chapter XI some of the adventures which marked the Odyssey of M. Sommer.

Since in this little book I ought to dwell upon my own case especially, I will state how much the very idea even of writing the present volume entered into the programme about to be expounded. For forty years I have been busied with the physiology of the organs of sense, and yet, while following the profession of an oculist, I have not allowed myself to be carried away by the practice of this means of making a livelihood, to the point of losing interest in socio-logic matters. I have been a Deputy, and a member of many associations for general

helpfulness. All this past seemed to me a useful point of departure from which to make, with results, the researches and inquiries which have resulted in this book. Like the architect of whom I have spoken, who, being unable to design, busied himself with the history of his art, I thought that, being no longer able to do operations upon the eyes or make optical experiments in the laboratory, I could make others profit by putting together my knowledge.

I have divided, as far as possible, among the members of my large family the cares with which they wished to surround me and which it would be disagreeable to ask of a stranger; and since no one is my especial secretary I have reserved to myself the sorting of my papers in portfolios which bear the titles on the back both in ink and in raised points. A faithful friend of very varied learning comes from time to time to keep me in touch with the scientific and literary work of our period. I ask no member of my family to read what can be read by a servant, such as the papers, for

instance, or to go with me on my errands. Thanks to this arrangement, one or another of them can travel without remorse at leaving me for weeks or months ; their freedom is respected as well as mine.

I said that I had to give up optical research and consultation. This is not absolute. My successor at the Sorbonne does me the kindness to come and tell me from time to time what is being done at the laboratory where he was a long time my junior ; and if some old patient insists on consulting me, I call in to receive him an assistant who for twelve years helped me in my private work, and who, being a good observer, describes to me the condition of the invalid and thus gives me the illusion of being still useful as a physician.

It is for each one to choose between my method of doing and that of a very intelligent blind man, an old inventor, who had a happy fortune in the choice of a person whose permanent collaboration gave him entire satisfaction. He had taught her that very difficult art of telling what she saw

and keeping her place. For instance, if he had a calculation to make, the help consisted in her doing nothing mentally and of calling out the figures ; the blind man was thus obliged to follow the process himself all the time.

Intermediate between these two systems is that of M. Riggénbach. I quote verbatim :—

“ My duty as professor of theology obliges me to have permanently an educated secretary who helps me in my scholastic work.

“ The work of the secretary is very wearing, and the one who assists me does not remain as a rule more than one or two years with me.

“ Naturally this arrangement has its disadvantages, for it necessitates my getting used rather often to a new person and each assistant learning my way of work and my processes. This demands on both sides good will and patience, but working with an assistant younger than I am brings also its stimulus, and there has always arisen a lasting friendship between me and my secretaries.

"My secretary also accompanies me most of the time at my work."

Thus to train a coworker with the certainty of having to part with him must be a trying effort for one who has not the lofty soul of my Bâle correspondent.

As a remarkable example in the list of schemes considered in this chapter, it is interesting to cite Dr. Vosy of Choisy-le-Roi, who continues the practice of medicine, and in two ways, either by going as consultant with his *confrères* of the vicinity or in attending cases of labor. It appears that for certain young women the blindness of Dr. Vosy is even an additional reason for employing his services.¹

This leads me to recall that in Japan the blind have the monopoly of massage. It seems to me that had my loss of sight been accompanied by falling into poverty, I should not have hesitated to make myself skilled in the technique of massage; I suggest this idea to my *confrères* with the greater confidence since there is already in Paris a blind masseur who, with-

out being a physician, succeeds in earning his living.

That I may not be accused of forgetting, I ought to recall that for more than half a century the blind have been taught to make baskets, to weave mats, to make brooms, to measure cloth, and to reseat chairs, for which opportunities offer in all countries. It is needless to say that even for those born blind these are trades of the smallest recompense.

A musician becoming blind might, if not too old, take up the work of tuning pianos, but if he did not also add the work of attending to organs, the outlook would not be brilliant. There is no use in trying to teach the piano. Not being able to watch the position of the pupil's hands nor to read the notes with him, he could only hope to get lessons at the lowest terms. I have met blind persons who gave lessons in modern languages, always, however, for the lowest price.

It may be said in general that those who lose their sight late in life, though they

may be much less adroit in getting about than those who are born blind, are in a much better position to do well such acts as they are familiar with. Their previous knowledge of the visible world makes them apt in those duties the learning of which is very hard for the blind from birth.

For instance, the study of French orthography is enormously hard for a blind person ; if he succeeds in mastering it, it is thanks only to perseverance and the concentration which often results from being undistracted by sight. For a blind person who knows unhesitatingly his spelling, there is nothing easier than typewriting. It is objected that typewriters are usually stenographers ; this is true, but the blind can confine himself to making copies, having the notes read to him by a less scholarly person. He may also hope for employ in one of those large firms where the head dictates his correspondence to a phonograph, dividing the cylinders among several typewriters.

Helmholtz told me, in 1867, that in the

choice of his work he was guided by the consideration of a kind of inventory which he had made of his mathematical and musical aptitude, of his physiological and anatomical knowledge, and of the means at his disposal in the laboratory at Heidelberg; then, recognizing that all these circumstances rarely were found brought together, he came to the conclusion that by devoting himself to a scientific study of music and audition he might succeed in making discoveries which had escaped mathematicians, physicians, physiologists, and musicians, more eminent than he, each in his own branch.

It is by a process quite analogous that one becoming blind late in life, after having made review of the means at his disposal, can make a wise choice of a new career.

V

NEATNESS, HYGIENE, HEALTH

So far as the care of their bodily neatness goes, nothing prevents the blind from doing exactly as those who see. They who have been used to shave themselves can continue to do so, and if they are afraid of cutting themselves, they may use a safety razor.

There is reason, however, to call the attention of the blind particularly to the care given the hands, so much more exposed to being soiled, as they are used to supplement the sight; and since the blind may be led without knowing it to touch objects of doubtful cleanliness. I will cite but one example: some fashionable staircases are broken at each turn by wooden posts considered decorative, which easily allow the dust to accumulate upon the hand-rail, since their inconvenience prevents most people using

them ; when I go up such a stairway I take care to touch only my nails to the rail.

The blind do not like to wear gloves, and they are right. I happened on a journey to meet two brothers, one of whom was blind, and at the first meeting I had no hesitation in telling the blind one by the fact that he wore no gloves.

The clothing of the blind is particularly liable to be soiled, either at home, while eating, for instance, or on the street by contact with the walls or passers, or by spattering, owing to their inability to avoid puddles of water or mud. In wet weather the blind who go out alone are much more liable to dirty their clothes than those who are accompanied, for, in order to avoid stumbling on going up or down crossings, they are in the habit of raising the feet high, and the fall each time causes spattering.

It is for the household of the blind to watch over the tidiness of his clothes, and it adds much to the repute of his family that the repulsion caused by neglected

apparel is not added to the other causes of isolation of which he is the victim.

Although I have put into practice from the first the principles of antisepsis, I believe the fashion which, under the pretext of hygiene, does away with all hangings in the room to be extreme. It results, in much-used rooms, in a noisiness which is the foe of good acoustics. Seeing nothing, it is well to hear the best possible, and to this end I greatly prefer to live in a room whose walls are hung with tapestry.

More than printed books, volumes in Braille may be vehicles of contagion; they may have been read in bed, or even under the covering of the bed, by blind persons having a contagious disease, and who have constantly handled them while reading, and it is by still fingering them that we read. Institutions which lend books to the blind ought to take cognizance of this danger, which is no small one.

To have done with borrowed books: I would recommend not moistening the reading finger with the tongue, and this is a

D

privation; for when a page is dusty, or simply when the sensitiveness of the finger begins to tire, one can give a little more delicacy to the touch when rubbing the finger over a surface, by slightly moistening the tip.

In a general way, it seems to me that great care should be given to the hygiene of the blind, because in their condition illness is particularly hard to bear; but there is no need to carry to the extreme an obedience to the Draconic prescriptions of many hygienists, who think nothing of depriving their clients of the most moderate pleasures of the table. To act thus toward the blind is an exaggeration in which the family ought not to become an accomplice. I speak disinterestedly, for I am the least gourmand of men, and I insist that the blind be left in all reasonable degree all the pleasures of good food, coffee, *pousse-café*, and tobacco. If this causes him to die a little sooner, which I doubt, you will at least have spared one of the few material pleasures left him.

In 1834, for the first time, practical gymnastic instruction was introduced in the School for the Blind at Pesth. This training was developed by Klein at the Blind School in Vienna. Following the sporting tendency of the English, we would expect to find gymnastics more especially developed in their schools, and in this matter the one at Norwood is very remarkable. Exercises are carried to truly astonishing feats of acrobatics.

Nothing prevents a blind person from doing most of the feats which suit his taste. He can compete with his friends who see in agility upon the parallel bars or the trapeze, etc., but it is always an effort for him to go to a gymnasium and make a show of himself. On the other hand, I think it is very advantageous, if one has the courage to overcome the *ennui*, to set oneself at home to exercise with machines, or, for example, with dumb-bells. Especially on days when bad weather prevents going out on foot or on a tricycle, gymnastic exercises of this kind appear to

me very recommendable. The deep *ennui* which makes them so much shunned by those who see ought not turn the blind from them, as he, on the contrary, may find in them during his hours of solitude a healthful occupation.

Chamber gymnastics, an antidote for the almost absolute immobility in which he lives, seem to me decidedly indicated for the blind. He will never take too much; he must be urged to take enough.

As regards medicines: it is well for the blind to be able to give them to himself without error, especially such as are to be taken at night. This can be done. For instance, I often take calomel pills on going to bed. Instead of having them in different sizes, I have them all of one centigramme, so that I have only to take several from the same box, in case of need. I have equally in the same box other pills which by their hardness or their size keep me from mistaking them for the former kind.

In case of sleeplessness I have from time to time to take one or two teaspoonfuls of

syrup of chloral. For this purpose I have always on my table two little flasks, each holding just one teaspoonful. It is practically impossible for me to measure alone the exact amount to take from a bottle, and it seems cruel, just in order to get help for my sleeplessness, to disturb the slumber of another in the middle of the night by ringing a bell.

VI

DWELLING

I HAVE had occasion in the course of my medical practice to persuade a patient threatened with blindness to purchase a residence, so as not to be exposed to the danger of a forced change of home. For, indeed, to a blind man a change of dwelling-place is almost a disaster. For myself, and in this I believe that I am not the only blind one, every displacement, even the slightest, of surrounding objects, is most displeasing. It is a pleasure for me to be able without hesitation to put my hand upon my books, my familiar things ; I like to know where the objects are among which I have lived, and it would be a pitiful effort for me to try and picture them to myself elsewhere than where I have long seen them.

In daily life we respect in my home Franklin's maxim, "A place for everything

and everything in its place." Everything after use is immediately replaced, for example, chairs which may have been moved by a visitor. If a stranger comes to visit me, I am left alone with him, and I have no need of any one to put any paper in his hand or to show him the use of my optical instruments. I go about the house without fear, and the more freely since I have always with me one of the light wands of which I spoke above.

It is necessary, I have heard it said, in the dwelling of the blind, for the doors to be always open or shut. I am not of this opinion. Let us admit, indeed, that the family have trained themselves never to leave the doors half open; one day, when a stranger has neglected this precaution, the blind person, full of confidence, runs into the door and bruises his forehead. The harm is not great, but if you wish to avoid it, it is best to take no precautions. Provided the blind never goes ahead without moving the tip of his stick back and forth in front of him, his security is perfect.

I believed at first that the better to recognize my whereabouts I would do well to place markers, for example, along the wall; thanks to my stick, this has not been useful. In a very large house it would be convenient to have in certain places paths of carpet or linoleum, but I have not felt the need for them.

On the other hand, in a garden, even the best known, I feel myself lost. Passing some time in the country, I finally, upon the advice of my friend, Dr. Chibret, had a cord stretched to follow a certain path and so travelled about like a tramway guided by its trolley. In the case of a permanent establishment, I would have a strip of asphalt or concrete laid in the line of a walk, to make a path where I could walk freely while reading some light book printed in raised type.

As I go to bed much later than the rest of my family, I have had put in my bed an electric coil which allows me, by means of a switch, to warm my feet without disturbing any one.

To be able to call for help in case of need, wherever I may be, in the house or in the garden, I make use of a whistle, which I always carry in my pocket. Mine is an English one of characteristic note.

A means for calling, which Mr. Kenneth Scott showed me as used by the Orientals, is to strike with three fingers of the right hand in the slightly hollowed palm of the left.

VII

MEALS

SAVE for rare exceptions, those born blind eat untidily and constantly put their fingers in their plate. Persons who lose their sight know without being told how disagreeable the appearance of this is. Accordingly, they will do well to restrain themselves from the start from ever using their fingers for eating.

Meals being for the blind the pleasantest moments of life, it is very important for him to train himself to eat properly, so that he may feel in position to accept an invitation out. One cannot therefore go too much into details upon this topic.

The first precaution to take is to fasten on the chest a napkin to prevent spotting. There is no need for this napkin to fall unexpectedly. The simple means to avoid this is to make in one corner a little knot, which

is tucked between the neck and the collar of the shirt. The napkin then remains as securely in place as if it were fastened with a button.

The most difficult proceeding is to eat soup properly. One can do this by tipping the spoon a little before carrying it to the mouth, in such a way that it is not too full.

Certain acts are impossible, but they are not indispensable. Thus I have given up putting mustard upon my meat in suitable amounts. To the difficulty which the blind experiences in doing everything without help, there is this counterbalance, that his neighbor at the table always is glad to help him. I have learned to let my neighbor do me little services even when I have no need of them. By putting the index finger of my left hand a little into the glass, I can easily pour my own drinking water. But what advantage? If my neighbor is happy to cut my meat and my other neighbor proposes to pick the bones from my fish, why should I deprive them of this pleasure? One of my correspondents makes use of a

plate divided in the bottom by a ridge so as to separate the meat and the vegetables.

At the start I got myself a fork made of aluminum. The lighter the fork is, the more easily one appreciates the weight of the morsel which is picked up; if it is too heavy, it is put back on the plate and cut again. As a matter of fact this help is no longer very useful to me, and I am assured that I eat sufficiently well to venture into a considerable company.

More than once friends with whom I dined have had the bright idea to keep the servant with whom I came, to help in the service. This servant, knowing my habits, helps me to portions as I need them without my saying anything, and fills my glass so that no one is bothered with me: and the conversation, which to my mind is all the pleasure of the meal, is not interrupted by material cares.

If the person who serves me is a neighbor just met, I obtain almost the same result by having him read me the menu at the beginning of the dinner and telling him at

one time what I intend to eat. If I do not do this, my inexperienced neighbor waits for me to ask what the dish next him may be, and if by chance I am in the act of speaking, he waits till I have finished my sentence. There results a delay in the service, and the attention of the diners is directed to us, to the detriment of the conversation.

If the meal is the best time for the blind, it is due to this, that he finds himself in the society of persons immobile in fixed places, and that in consequence he can take part in the general conversation without the intolerable preoccupation of the coming-and-going of his interlocutors. There alone is he sure of not talking to a person who has just gone off; there, too, being told at the start the position occupied by each one, he has no need to make an effort to recognize by the voice the different persons who take part in the conversation. Be the repast ever so mediocre, the good humor of the company helping, the blind man can for an hour enjoy society almost as well as they who see.

If the pleasure of being at table with good society is real for those to whom almost all other pleasures are denied, how much greater, is it not, if he can give it to himself in his own home, where he always feels more at ease and where he has the advantage of choosing table companions to his taste! Batzko has said that two happinesses only are accessible to the blind: that of gathering his friends about his table, and that of thinking of the compensations which are reserved for him in a better world. The first appears to me the surer, and I refer those who prefer the second to Batzko's book.¹

¹ Batzko, Ludwig von, "Ueber mich selbst und meine Unglücksgefährten die Blinden." Paul Gotthelf, Kummer, Leipzig, 1807.

VIII

WATCHES AND CLOCKS

DURING the forty years since I came of age I have always kept before my mind Franklin's motto, "Time is the stuff of which life is made." This stuff I have never frittered away; I have used the smallest moments. Accordingly, in spite of my perpetual night, wherein I am very often subjected either to inactivity or to the inability of escaping from inopportune conversation, I have kept a means of knowing the time; and this need, poor as it is, will be my excuse for devoting a chapter to this question.

There are watches without crystals whose covers open on pressing a spring. These watches, of a very common type, are adapted to the use of the blind by the addition of twelve little metal pegs fastened around the circle of the face, opposite each numeral. By touching it is easy to tell the position of

the hands accurately enough to tell the time almost to the minute. One should accustom himself from the first to use only the left hand for taking out the watch, opening it, and feeling the hour. He should train for this last work solely the left thumb.

If you are willing to be satisfied with less accuracy, you may get one of those big old watches, now out of fashion, which were called turnips. On opening the glass, you can feel the hands. I find it pleasant also to carry a repeater. Nothing prevents the combining of these two systems and having a repeater arranged to show the time by the touch.

It would be hard for me to give up having on my bedstand at night a little travelling clock which strikes the hour, for in case of waking in the night, it is much easier to get to sleep again if you can tell the time simply by pressing a spring.

A luxury which can be had at little cost, since a Black Forest cuckoo clock fills the need, is to have a clock whose pendulum makes enough noise to be heard in all parts

of the room. It is a good means of orientation. Another luxury is to place in the room a clock which strikes each quarter of an hour in a different way. Lost in space, I find the greater satisfaction in always knowing where I am as to time, which for them who see needs only a glance of the eye.

It happens that in my workroom I have two clocks which naturally do not run exactly in time together; when by any distraction I lose the time struck on the one, my attention is sufficiently roused to count the strokes as sounded on the second.

Lastly, to close, here is a trick by which you can tell the time in the night without other aid than an ordinary watch. Wind your watch slowly exactly at the time you wound it the night before, and count the clicks. You may find, for example, that there are one hundred forty-four, and you figure that there is one click for each ten minutes. If you have wound your watch before going to bed and on waking in the night wish to know the time, wind it again slowly, and for each click that you hear ten minutes will have elapsed.

IX

WALKING IN TOWN AND COUNTRY

IT is important for the blind not to lose the habit of going about afoot, and it is pleasant for the walk to take place without preoccupation on his part while chatting with his guide. To this end it is better for the blind to place his arm under that of his guide, which allows him to be a little more behind. Every time he must raise his foot, for example up on to the sidewalk, the conductor sharply raises his forearm a little bit. At this sign the blind lifts his foot so as not to stub it, and if necessary uses his cane to determine the exact position of the obstacle to be avoided. On the other hand, to warn of a step down, the guide presses his arm against his side as if to keep the blind one from falling in a trench.

The various persons with whom the blind has occasion to go out ought all to make use

of the same signals as have just been explained, for if each one uses a different warning, the blind man is confused. This is so true that I know of blind persons who have with the greatest difficulty decided to make a change in their guide. There is a double indication to be followed: for the associates of the blind always to make use of the same signs, and for the blind to resolve to accept from other persons a different course of action. With an unaccustomed guide, after showing him how to do, the blind must know how to resign himself if his directions are not followed.

Most blind persons like to take a child as their leader, not only as being cheaper, but especially because a very young companion is accustomed to obey. The child, if it has a good disposition, is proud of the importance of its rôle and put upon its mettle to do its best. It is exceedingly pleasant for me to walk in the country under the guide of one of my grandchildren, and I am sure that whoever has the honor of leading his grandfather finds pleasure in it and perhaps some moral profit.

In town I prefer the arm of an old servant, who has tact enough to keep out of the way when he has put me in touch with the person with whom I have business. If, for example, a friend meets me and enters into conversation, my guide discreetly steps aside until the interview is over.

The one indication which they who lead the blind ought to follow is not to try and conceal the condition of their protégé. Formerly the blind carried a placard, and I recall seeing a man go about the streets of London preceded by a little dog. This intelligent animal always kept taut the cord which the blind master held in one hand, while with the other he held a stick with which he sharply struck the ground at each step along the walls of the houses, crying without ceasing, "*Blind! blind! blind!*" All the passers turned out for him, and the man went about in the most crowded streets of the city. Most sightless persons are averse to such a proceeding and wish their infirmity to pass unnoticed. This ill-placed pride can only threaten their safety, but should be

respected. My opinion in this matter is that, if at times the guide finds it useful to warn the passers, he should do it in such a manner that the blind does not notice it.

Following the example of Dr. Sommer, I wear constantly smoked glasses, which hide the unpleasant stare resulting from blindness and which attract usefully the attention of the passer; and no one takes it ill that my guide, by signs or words, endeavors to make my passage everywhere as easy as possible, and that, for example, in the street railway he asks a traveller to give up his seat to me.

In Paris, and probably in most cities, the sidewalks have a fall toward the gutter, a slope less than that of the curve of the street, but very perceptible to the blind. After a short apprenticeship this fall warns of the approach to the crossing if one does not walk too fast. To tell the small unevennesses of the road, it is well to wear shoes whose soles are not too thick.

To tell if there is water in the gutter, the blind can swish his cane in it and tell by the sound if the ditch is dry or not.

They who become blind young make use of other indications, such as the sound of their footfall. They use also perhaps the "sense of obstacles," which will be discussed in Chapter XXV.

A trained guide leads his companion without jostling in the most crowded streets ; if they wish to avoid any one, he hastens his steps a little and turns a bit sideways, and the blind man, warned by this double movement, falls behind his guide and is not jostled by the careless passer. Other times the guide by a sign causes the passer to dodge, without the blind one knowing the fact. Opposed to this constant watchfulness, in wide and less frequented streets the companions may cease holding arms and walk side by side ; the sound of the guide's steps, the conversation, or the least contact suffice to assure the blind of his direction.

It is indeed a satisfaction for him to keep in his movements as far as possible the greatest independence. He does not like to be dragged or pushed about like an inanimate object ; and this is doubtless one of

the reasons why many blind persons are averse to going about with any one who is unaccustomed to leading them.

If on reaching his destination it is necessary for him to go upstairs, the guide lets go and places the blind one's hand on the baluster. By keeping his hand well advanced, the blind has a guide which tells him of the approach to the landings. This is self-evident, but, like many other facts, why has it nowhere been stated? For walking in narrow paths across fields, and above all in the mountains, it is well, while holding a cane in one hand, to be united to the guide by another stick held horizontally. After some practice this stick becomes a sufficiently sure means of communication, so that blind men have been seen, when preceded by an experienced guide, to make long, hard ascensions. There are all sorts of tastes in the world!

I may even cite blind persons who find pleasure in riding horseback. It is needless to say that they do not choose mettlesome horses, and I know only of Dr. Armitage

who has had a serious accident while following this sport.

I doubt if a person becoming suddenly blind late in life ever dares to go about alone, either in the city or in the country. It may be well, nevertheless, to show what those who are born blind are capable of doing in this line. I have seen, among others, the Swiss Joseph Birrer follow the trade of a pedler, going from village to village; and quite recently, at Paris, a blind man living in the Rue des Petits Carreaux, in the crowded quarter of the Halles, took long walks alone. He had always about him cigars and candies, which he offered according to circumstances to the men or children who came to his assistance. Equipped constantly with a cane and an umbrella, he took advantage of the least shower to open the latter, finding in its use a very easy means of knowing the vicinity of houses.

The blind, either in the country or in the city, go about much more easily at night than in the day, for then the fewer noises and less confusion are a great help to their

guidance. I have been told of one who under these circumstances never went out without a lantern, so as not to be run down by bicyclists.

In any case the blind can have recourse to a public carriage to take him in case of need to his home or to the house of a friend. It seems to me imprudent to trust oneself to an unknown driver without having ostentatiously had his number taken by a third person.

Persons who are gradually losing their sight have the very greatest reason for continuing to go about without a guide, in spite of the alarm of their family. They learn thus little by little to substitute for the information furnished by the sight those indications with which this chapter has been dealing. In proportion as their blindness increases, they will have to curtail the extent of their walks. On the contrary, they who become suddenly blind and wish to go out alone as much as possible will begin with very little walks close to their house, being watched over till they have acquired a sufficient assurance.

By this order of things I have actually practised myself to cross the boulevard on which I live, in order to be able at night, when I go to bed the last, to go alone to mail an urgent letter.

X

TANDEM TRICYCLE

WHEN I lost my sight, one of my first occupations was to find a form of physical exercise active enough to fill the needs of my temperament, as I have always badly borne a sedentary life. Being a fair bicyclist, my first idea was to get about on a tandem bicycle. This would have been easy enough on condition of always having at my disposal a trained wheelman, which is almost impossible of realization. I then consulted Mr. Pierre Giffard, the well-known manager of the paper *Le Velo*, and, after ruling out the tandem, we also put aside the sociable, in which the two persons ride side by side, to adopt the tandem tricycle.

After having gone about for several weeks on such a tricycle, I wrote to Mr. Giffard a letter, which he published in *Le Velo*. The important passages were : —

"Even more than they who see, the blind need exercise, for all day long, without taking note of it, the most sedentary person makes many small movements: he rises to get something, turns his head to speak to some one, stoops to pick up a fallen object, etc.; while the sightless stays, even when he is able to be occupied, in a relatively unmoving posture.

"'Do gymnastics in your room,' says some one. That is easy to advise, but deadly tiresome to do. Try with your eyes shut and alone to practise dumb-bells. You will tell a different story. After five minutes you will be at the end of your patience and will have scarcely used up a calorie, which is the purpose of bodily exercise. To burn up any number of calories, one must bring into action his large muscular masses. It is for this reason that the best sports are those which put into action the large muscles of the thighs and legs. I bring to proof the learned studies of my friend Lucas Championnière.

"For the blind, riding a tricycle is better

than walking afoot, for, however little confidence he has in his guide, the blind man, who it is understood takes the rear seat on the tricycle, takes his exercise without any preoccupation, while in walking he has to give some attention to going up and down the sidewalks. In crossing the streets he must hasten or slow his steps, or stop on signal from the guide, while on the tricycle nothing of the sort occurs. He conforms almost automatically to the quickening or slowing of the pedals of the man in front. If a sudden stop is necessary, the leader blows the horn and at the same time back-pedals or puts on the brake. The blind one does not hesitate to back-pedal also ; and, thanks to the stability of the machine, the easily made sudden stops allow progress without danger in the most crowded thoroughfares.

“Your advice led me to adopt for the trips I wish to make a means of transport at once hygienic, economical, and speedy.

“It is to be noticed that it is cleaner than a bicycle, for a mud guard on the front is sufficient.

“While the adoption of a fixed route is uninteresting for my guide, I find it pleasant to be able, if I give attention, to know all the time where I am. I recognize perfectly the curve which makes me swing round the fountain in the Place François I, the descent from this place to the Avenue Montaigne. The noise of the carriages tells me of crossing the Rue Pierre Charron. I know by the different roll on the pavement the moment when we pass into the Avenue Alma, etc.

“If you wish further details, come and get them. I offer you the front seat on my tricycle to go some Sunday together to breakfast in the country. We will chat it over on the way. But I make one condition; the first kilo or so is to be made in silence, for you are too much accustomed to a bicycle to succeed at first on a three-wheeler without accident. Look out for your trial trip. Mounted on a tricycle, the most expert bicyclist begins by running into the gutter.”

After three years of use I can say that the tricycle has done more than I expected.

At first I found it very unpleasant to be at the mercy of a guide in the most crowded and noisy parts of the city. It took a good deal of force to throw off this wretched feeling by telling myself that, after all, one is in much greater risk in a cab which may be drawn by a vicious horse or driven by a drunken cabby. I have become used also to the side rolling which the tricycle has, as the inequalities of the street cause one or the other side wheel to rise or fall.

Besides this rolling, the tricycle has other faults. The principal one is that it is hard to apply a brake to the rear wheels. If it is put on the wheels, its action is unequal, and because of the differential it cannot be put on the axle. There is fear also of the chain breaking while going down hill rapidly. You must be content to go down steep hills slowly enough so that, if the chain does break, a stop can be made by the front rider, either by the brake or, what is surer, by braking with his foot.

Another inconvenience of the tricycle is that punctures are more frequent than with

a bicycle ; since the wheels follow three trajectories, there are three times as many chances of picking up a nail.

My first machine, bought on a chance, had unequal wheels, the front wheel being of much larger diameter than the rear wheels. I do not know if this arrangement has any advantage; probably it has, for I found the same arrangement in the only other tandem tricycle I have had occasion to examine. But it is certain, on the other hand, that it is an advantage, so far as repairs are concerned, to have the wheels of the same diameter; for it is sufficient in such cases, when starting for a long trip, to carry a single extra inner tube.

As a matter of fact, I use a machine made by the Française Co. to the following specifications: the machine as short as possible, 2.10 m.; the frame very strong, with double cross-bars, 0.55 m. high; the wheels strong with steel felloes, 0.65 m.; pneumatic tires, 0.42 m.; single air chamber; brake on the front wheel controlled by a simple lever. The machine weighs

32 kg. The pedals are sharply bent back, which saves the feet in passing through mud and which does not offer the same inconveniences in a tricycle as on a bicycle.

The machine which I use every day and which gives me entire satisfaction develops exactly 5 m. This is not much, but it is not desirable to go fast. To know the distance travelled, I have only to divide the number of pedal strokes of one foot by two and multiply by ten. It is interesting at the foot of a slope to ask the guide to estimate the length, so as to tell at each moment if the effort caused by the ascent is to be much longer; and as the 5-metre distance permits an easy control of the estimates, the guide soon comes to make them exact.

The spacing of the rear wheels is such that the machine can pass through a door 0.80 m. wide, which in the city avoids the need of opening the *porte cochère*. In the country I prefer, as giving less oscillation, to use my old machine, in which the space is 0.25 m. greater.

There can easily be a lady's saddle on either the front or rear seat, according to the sex of the leader or the blind person.

If the frame is weak, it may become twisted. In this case the machine tends to swerve to the right or left. However slight this may be, no delay should be had in rectifying it, else the frame bends more and more; and at the most unexpected moment the front wheel bends into a figure eight, a most serious accident, as the blind man lacks notably the power of decision in emergencies.

The idea of having the blind ride wheels is not new. It has been the custom especially at Norwood, where there is a sort of series of twelve courses, of which only the first and second are used by those who can see.

I learn, too, that there are in France at least three blind persons who use a tandem tricycle: one near Saint-Nazaire, another at Melun, and the third at Brienne-le-Château.

XI

TRAVELLING

MANY blind persons have a fondness for travelling, either to meet those whose conversation gives them pleasure, or just to enjoy the sounds of nature; witness the account by Guilbeau of a walking tour in the mountains.

Others travel to earn their living, as by giving concerts or tuning pianos at houses, often in a considerable radius. You may read in the little book of Nägeli's¹ the adventures of the blind pedler, J. Birrer, who in all weathers went alone from village to village selling his goods. At each international congress of typhlophiles you see blind persons who have come alone from different parts of Europe. Often the blind one has himself driven to the station in a

¹ Nägeli, Sonderbare Errinnerungen und merkwürdige Lebensfahrten des Jacob Birrer. Lucerne, 1840.

cab, where he is put with his baggage in the care of a porter. I know one who, if he is to stop in a strange city, sends a letter ahead to the station-master, telling the time of his arrival and asking to be met on the platform by one of the service men, who will put him in the omnibus of the hotel to which he is going.

In the course of a journey it seems unwise to depend on the good services of the other travellers, save such as are offered freely, which often happens, especially when travelling third class. The only help one should ask of them is to be put into the hands of one of the station men, who will for a bit of silver generally do gladly all that is needed. By this means M. Hauptvogel came from Leipzig to Paris by the ordinary trains, without missing any change of cars at the junctions, which is the chief difficulty.

There are some hotels patronized by a clientele of the blind ; for example, in Paris, furnished rooms at 4 Rue Bertrand, quite near the Institution, and in London the

pension of Miss Blott, 30 St. Charles Square, North Kensington, W.

When the blind man arrives at any hotel, he does wisely to take the first pretext to give at the start a rather large tip to those servants whose services he will need ; by so doing he will want for nothing at the *table d'hôte* and will not be at the mercy of his next neighbor.

I know a blind man, a devoted traveller, who tries to appear as little awkward as possible. To attain this he has made a number of ingenious observations. For example, he knows that to get into a beach-wagon, if there are two steps, he must, if he is on the left of the wagon, begin by putting his right foot on the lowest step ; if he starts with his left, he is lost.

I do not delude myself as to the usefulness of this chapter, for I have as yet found but few persons who lost their sight late in life who have the courage to travel alone despite the opposition of their family. M. Sommer, of Bergedorf, near Hamburg, writes me as follows : —

“ I am of the opinion that journeys taken alone without a guide contribute greatly to strengthen the confidence of the blind in themselves and to render them independent. I have made the following trips alone : from Hamburg to Harwich by the English steam-packet. For a tip the steward had the kindness to come to my aid. At Harwich he went with me and my luggage as far as the train which took me to London. At London I was met by a lady to whom I had sent my photograph so that she could recognize me. During my stay in London I employed as my guide a little boy of twelve. I prefer children of this age, whom I find very useful if they are honest and truthful. I take care of my own linen, arranging my clothes and other belongings ; I unpack and pack my trunk on arriving and leaving. I make use of other persons only for reading. My correspondence comes to me in Braille and I reply on a typewriter. . . .

“ After a stay of a month I set out for Southampton. A railway employee undertook to put me and my baggage on the

steamboat, where I placed myself in charge of the steward. After a crossing of twelve hours I arrived at Havre. The gentleman who was to have met me was not on the wharf, so I passed the customs and had myself taken in a cab to the hotel, which I knew of from an advertisement in the paper. . . .

"After a stay of six months I embarked for Hamburg. It was in December. The packet was German and the sea rough. Since, before losing my sight, I had made the voyage from South America on a similar boat of the same line, it was possible for me to find my way about without a guide, and I had recourse to the steward only to cut up my food. By reason of the storm we lost one blade of the propeller, which lengthened the voyage, and made us late in reaching Hamburg, where there was no one to meet me. The steamer did not go to the wharf, but anchored in the middle of the Elbe. Everybody, even the surgeon, left the boat as soon as he could. I alone remained. It was eight o'clock at night and cold, the thermometer being at

12° C. I had to take an unknown workman to get me ashore and to pass my many bags through the customs. We went down together, he carrying my bags, into a steam launch which took us to the custom-house. After the inspection I took a carriage, to which I intrusted my trunks, and gave the driver the address of the lodging I had engaged. Unfortunately they had sent me the wrong number, which put me to the trouble of hunting the house, up and down the street, till I succeeded in finding it.

"If such adventures are unpleasant at the time, you can get some satisfaction from them later in having got out of the trouble alone. They all go to strengthening one's self-confidence, which you acquire more by travelling than by any other way."

Quite recently, in speaking of this subject, my friend Mounier, of Geneva, wrote me that he travelled from time to time alone, although not obliged to, and though he preferred a companion; he thus gained a security in case of his travelling companion being obliged to leave him.

XII

OUTSIDE ASSOCIATIONS

IT is hard for a blind person to make new associates, and, besides, relations with persons whom he has never seen are with great difficulty brought to any degree of true intimacy, unless by rare chance there is in his family some one close enough of observation and expert enough in describing, to give him a picture of the new friend.

The blind has, therefore, the greatest reason for keeping up his old relations; every interruption is a mistake. For this reason I no longer go back to the societies which formerly I attended closely for many years, such as the Société de Physique and the Société de Biologie, for the membership of these societies is more or less completely changed; while I do continue to attend the meetings of the Academy of Medicine,

to which I went regularly up to the time of my misfortune. As a matter of fact the blind is reduced to conversing with those who come to him, and in a gathering of men who have no personal interest in him he is isolated and more lonely than in the darkest corner of his own home.

You must not think that people crowd about the blind ; they shun him as useless. How many times has my guide told me of persons passing by me without stopping to shake hands,—friends of yesterday with whom I had only the pleasantest relations. Every one is busy and passes without a word. If he stops with the blind at all, he fears he will not be able to break away easily. This is especially true of the numberless persons with whom one is wholly satisfied to exchange just a few words. These people drop out of existence for the blind.

If we are treated thus, it is often our own fault. As a matter of fact if any one in a rather large company comes up to converse with us, we are apt to fasten ourselves to

this kind neighbor and stick. This is a great mistake ; the speaker, prevented from mingling with the guests, does not let himself be caught a second time and at the next meeting avoids accosting us. I have learned to my cost that in such cases our interest demands our taking the initiative, and freeing the friend who has been willing to tackle us by asking him to put us in touch with some other person, which he gladly does.

Some people imagine that in talking with the blind they refresh their sorrow by speaking of things seen. Quite the contrary ; nothing is pleasanter, when one has no sight, than to be informed, through the eyes of another, of visible things, however insignificant.

It happens, too, that by an ill-judged discretion or from timidity they hesitate to begin a conversation with us. They fear to disturb, and above all they do not know how to start or to continue the conversation. They refrain at the first meeting and continue indefinitely to refrain,

because they do not take sufficiently into account that one has only to talk to a blind person as if nothing were the matter.

In meeting the blind, little things affect their spirits disagreeably. One may be hurt if he does not take the hand extended to him, or if at the first word of friendly greeting he says, "Who is it speaking?"

It is for all these reasons that the majority of blind people are led to shut themselves up at home, confining their relations to their family and the few true friends who continue to visit them. It is much to the heart, but monotonous to the spirit.

It is the duty of those who care for the blind to take him into society, to tell him as far as possible who are the people present, that he may have a little initiative, and to bring up to him those who do not come of their own accord, not realizing how much happiness their little effort may give the man isolated in night.

What makes the position of the blind most particularly trying in company is that he does not know when his interlocutor

leaves. If he always has some one with him, his guide informs him; but this is a hard task for the companion. In a salon one who speaks to a blind person, and by rare chance has taken pains to tell his name at the beginning of his conversation, never thinks to say again who he is when he comes back after a short interval. When I can, I like to take my place on a sofa which allows me to take very lightly between two fingers, quite unseen, a fold of the person's garment with whom I am talking, and who then cannot leave without my knowing it.

It is not given to every one to have a faithful companion who knows how to make him hear the name of whoever comes to him without affectation, and as if addressing them to wish them good day; who knows how in a conversation to make the needful remarks to save him from addressing some one who has just left or from calling him to witness; who knows how to keep him in touch with the movements of the guests so as to save him that hateful thing, speaking to empty space.

All things considered, unless he is accompanied by some one who makes complete self-sacrifice, the blind ought to avoid going into a large company.

XIII

READING ALOUD

To be read aloud to will always remain one of the greatest resources of the blind; but how inferior to reading oneself!

As regards general literature, with a good reader one can enjoy books well enough. But reading the paper! It takes an hour and a half or two hours to read aloud a paper of the most moderate size. Try the experiment, noting the time it takes to read aloud a whole page of the paper. You would not believe it. As a fact the most poorly educated person skims through the paper and does not really read a fourth of it, and what he does read he takes in at a glance with a speed which no human voice can attain.

Try the experiment; you will be surprised at the difference in speed in favor of mental reading. To follow the reading of

a paper from beginning to end is at most acceptable to the unhappy pensioners of Quinze-Vingts, who, seated like a class, listen together to the reading of a paper which they choose by an annual vote.

The ideal would be for some one knowing the tastes and associations of the blind one (note this last point) to read the paper herself, marking the facts and portions of articles which may interest him. Even then the person who reads aloud the marked passages will never take the place of reading with one's own eyes, where the rate constantly changes, hastening to the conclusion here, and slowing there, as a paragraph merits attention or not.

If, with a great deal of good will and intelligence, the household of the blind can keep him informed of the contents of the papers, it is not so with the special reviews, especially those which appear in foreign languages. I have almost given up the pleasure of following the progress of ophthalmology, for it would take whole days to have read to me what I would run through

in a few minutes a day in our special reviews.

If I prefer for a reader a hired person rather than a friend or a relative, it is because I like to be able, with entire want of regard for him, to skip paragraphs, sections, or chapters, or to have repeated important passages. But the paid reader must be honest enough not to skip without warning whole pages of a volume which bores him. This has happened.

One who feels on equal footing with us hardly tolerates our taking notes while he is reading, either in ordinary writing or in Braille. He is impatient if we stop him for this purpose; and if we let him keep on while we write, he complains of our want of attention. To read to a blind person is not an easy task.

I had read aloud to me, by my first reader, Legouve's "Art of Reading," but scarcely had she got into the principles of the master, of which the most important is to pause well at the punctuation points, than I had to change her. I have not had

the courage to begin again so laborious an education, and I content myself with a moderately good reader.

Save with very rare exceptions, people do not pay enough attention to the punctuation when reading aloud. The training, in this regard, of a reader whom one is likely to keep for a long time well repays the trouble. During the first sessions you must require without any mercy at all a long pause after each sentence. This is useful for the reader. It allows the listener to retain more or less what he has just heard. If the reader does not pause long enough at each period, the next sentence, as it were, wipes out the preceding from our mind. Besides, the pauses are unconsciously used by the reader to read the next sentence mentally; as a result he places much better inflection when he reads it aloud.

It is important also, as it is hard, to oblige the reader to call attention so far as necessary, to the marks of punctuation, such as quotation marks, parentheses, or change of characters. If a letter occurs in

the text, the reader should begin with the signature; if a footnote, he must say "beginning of the note," "end of the note."

An untrained reader passes over in silence the titles of chapters or the numbers of paragraphs.

One gets great pleasure in being read to while walking about in a garden; it is a satisfaction thus to combine mental refreshment with needed exercise. Walking beside the reader and guided by the steady sound of his voice, it is agreeable to move about thus in freedom. But, poor reader!

I know some blind persons who have some one come at a fixed hour to serve as reader and secretary. I wonder at them, for I have never been able thus to make myself the slave of set hours ahead. I much prefer to employ, when I wish, a person who is busied with other work and who returns, for example, to her needlework, if a caller comes in.

During vacations I have plays read to me by my many grandchildren, distributing the parts among them. By rivalry they

have made themselves perfect in the art of reading aloud, and I think that later they will have a pleasant memory of the happiness which they gave their grandfather. This kind of theatre in an arm-chair has given me a choice recreation.

XIV

HANDWRITING

THE question of writing presents itself to one who becomes blind in quite another aspect than it does to one blind from birth. It is almost impossible for the latter to learn the ordinary form of writing, while for one who has written much it is not hard to continue, in spite of the loss of sight. If, then, writing by points, devised about a century ago by Captain Barbier and of which Braille was the Amerigo Vespucci, is almost exclusively used in blind asylums, it seems to me to hold only a secondary place, in the means for inscribing his thoughts, at the disposal of one who has lost his sight at a relatively late age.

Any one can assure himself of this. Nothing is easier than to write several words without looking. The difficulty begins when it comes to writing several lines without having them run into each other.

A well-known plan consists of first folding the paper in plaits; that is, you make a first fold about a centimetre from the edge of the paper; then without unfolding this you make another in the opposite direction about a centimetre lower down, and so on until finally the paper is plaited into a packet. You write on the top face of this packet, which you unfold as you write on successive folds.

The expedient of the paper folded in plaits is not convenient when one has much to write; accordingly a great number of inventors have devised scotographic boards more or less serviceable. I have had one made which has given me full satisfaction, and which, with others, has served me in writing the present volume. It was described with explanatory diagrams in the magazine *La Nature* for May 18, 1901. It can be had in France of Giroux, 19 Rue de l'Odéon, Paris. Not being patented, it is also made abroad. This board, though a little cumbersome, does away with the need of a table; to use it one should sit by preference

in a low chair and hold it on the right knee.

It was in the following words that I presented my tablet to the Academy of Medicine, April 23, 1901:—

“Last year, having lost my sight, I wished to procure a means which would allow me to continue to write as in the past. Among the many systems coming to my notice, of which I tried several, none gave me satisfaction, for they did not leave my arm and fingers entire freedom in their movements. The guide, whatever it might be, was a constant obstacle which hindered or cramped the writing, and a cause of preoccupation tram-melling to the freedom of mind of the writer.

“I then had made this scotographic tablet which I demonstrate to you, and which is constructed on the physiologic principles of writing which I have elsewhere set forth.¹

¹ “Le mécanisme de l’écriture,” *Revue scientifique*, May 21, 1881, Vol. XXVII, p. 647. “Sur l’écriture,” Société de biologie, November 24, 1883 (distinction between the isochronic movements of the thumb and the fingers). “Essai sur la physiologie de l’écriture.” pp. 32. Alcide Picard et Kaan.

The characteristic part of this little apparatus is a sort of rim where the writer's elbow rests. Pivoting in a horizontal plane,

the forearm describes the arc of a circle of large radius with the point of the pen, and this arc gives the general form to the line of writing. If the paper is of moderate width, the lines thus made have a very slight curvature and are much less unsightly than a similar curve seen in a good many writings.

"A second feature of my instrument is a ratchet

which serves to move the paper up a centimetre each time the writer passes from one line to the next.



"And lastly, you see that I use one of the handy fountain pens which come from America. It seems to me better to write with ink than with a pencil, for it is very hard for the blind to keep tab on the point of his pencil so as to turn it and not allow the lead to get flat, which broadens the lines without his knowledge and may render them undecipherable.

"But it may happen that the pen does not mark at the start, and I have had the heartbreaking experience of finding after I thought I had written a page that I held only a blank sheet.

"To avoid this mischance, I use a narrow strip of unsized paper, similar to copying paper. To tell if my pen marks, I only have to draw a line across the paper. If the ink runs, it moistens the paper, which lessens its resistance to tearing. I try the experiment before you without fear of failure; you see that the paper tears under very slight effort and I decide that the pen worked.

"If you wish to have a sample of the usefulness of my tablet, you have only to

cast a glance at the manuscript of the present communication. In my fear of not being legible I have written a little slower than usual, and if I may believe my friends, the result is really acceptable."

*My elbow rests on my desk
the planchette slips fast to it
so the sheet cannot be set down
if you*

When I have to write a letter away from home, I go to work by a system analogous to that realized in my planchette. I put my right elbow on the table, close to the edge, and with the well-settled intent of not moving it while I am writing. Next I put the paper down so that its left border coincides with the left edge of the table. Whenever I have finished a line, I slip the paper along the edge of the table so as to carry it away from the fixed point held by my elbow. With a little skill the left hand comes to move the paper each time by almost the same amount. To do this, you can, for

instance, hold the paper by the first four fingers, the little finger holding the angle at the head of the sheet and the edge of the table. After each line the trick consists in moving the little finger about a centimetre, and then, by the help of the four others, sliding the paper along until it comes in touch with the little finger. It is needless to say that by this method the lines are much less evenly spaced than with the planchette and that the manoeuvre takes more skill.

If you wish to write with pencil you should use preferably the Koh-i-Noor pencil, which marks very black while being very hard. It is stamped "British Graphite Drawing Pencil, Compressed Lead." Made by L. and C. Hardtmuth in Austria.

XV

TYPEWRITING AND PHONOGRAPHY

FOR the blind who before losing their sight had poor penmanship, one cannot recommend too strongly the use of a typewriter. This advice is all the more to be followed the younger the person, for then the length of apprenticeship in learning typewriting is much shorter, and the probability of profiting from it for many years is greater.

Instead of putting the Braille letters on the keys, it is better to learn the keyboard by heart; and the blind scholar can help himself in this by means of a paper on which he has copied in Braille the letters in the order they occur on the keyboard.

I have more than once urged patients threatened with blindness to familiarize themselves with the use of a typewriter. This advice was much more acceptable as

it was most often given to people who, not seeing well enough to make out their own writing, could still see the large letters on the machine. The advice does not seem to me good to be given to old people, for if at any age one can learn finger-writing, this does not mean that one can come to do rapidly an act so automatic and unconscious as writing. Besides, unless this automatism is obtained, typewriting is of but moderate use to the blind; for he cannot, like one who sees, write from a rough copy. He cannot make erasures, and so is obliged to construct each sentence in full before beginning to write.

At Montpellier a blind employee of the *Petit Matin* receives the news over the telephone and writes it on a machine; his sheets are then sent to the type-setters.

Machines have been constructed which print at the same time pages for those who see and for the blind; as yet these machines are imperfect. If his correspondent makes use of one of these machines, the blind can read without witnesses a letter addressed

to him by one who writes in Braille without himself knowing it.

For the blind, as for him who sees, the most rapid way of setting down his thoughts is the phonograph. The inconveniences of this machine are: first, its size, which scarcely permits its use outside the house; then the short time-duration of the rolls (in the ordinary model the cylinders hardly run three minutes); then the cost, already high for an ordinary machine, and excessive if one wishes a special model or one with cylinders which will run for half an hour.

In many American business houses the manager dictates his correspondence to a phonograph and the rolls are then distributed among the typewriters. Nothing prevents a business or literary man who becomes blind from thus making use of the phonograph.

For myself, I make willing use of the phonograph to dictate to it the plan of a piece of work, which I then have it repeat to me article by article as I proceed with the compiling. Lastly, thanks to the uni-

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formity of cylinders, it is possible to correspond with a friend who has a phonograph by exchanging cylinders by mail.

It appears that the gramophone, a recent invention, is much superior to the phonograph.

XVI

READING AND WRITING BRAILLE

IN special schools writing in dots, known under the name of Braille writing, is the cornerstone of the instruction. Accordingly, when an adult loses his sight, the first advice that the instructors of the blind give him is to busy himself with learning Braille, advice useful, no doubt, but to which the friends of the blind attach perhaps an exaggerated importance.

Reading Braille is a resource for hours of solitude. In case of insomnia a book printed in relief is an incomparable bedfellow. I find it very handy to mark the place where I stop reading by fixing on the edge of the page one of the very small spring nippers which you get at the stationer's. It is a trick, too, of the blind who are in the habit of making typographical corrections, to mark the line they wish to find again by a

raised dot made opposite it in the margin of the page.

If there is among the family of the blind one who wishes to learn to read Braille, he will do well to learn it on the back side, that is, from right to left, the reading thus becoming identical with the writing.

Reading Braille, so precious for those born blind, is only a *pis aller* because of its exceeding slowness. There is but a very limited number of blind who can read aloud a book in Braille with sufficient speed to make the listening to it endurable.

All my correspondents who know it, save those who lost their sight very young, are unanimous in reducing to a minimum, because of their slowness, the use of Braille for writing and especially for reading. To quote but one, I take this from a letter of M. Rigenbach :—

“I learned to read and write Braille immediately after losing my sight, but I have made very little use of it. Reading and writing in dots takes too much time and is too exhausting to be a frequent employment

■

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when there is the possibility of being read to or of dictating. Becoming blind at the age of fifteen years, I had not the speed and ease in writing of older persons. Accordingly I went twenty-six years without writing. Quite recently I bought a typewriter. . . .”

The slowness of reading Braille makes itself felt even more sadly when it comes to reading, for pleasure, the books which you wish only to skim or turn the leaves.

This results from the fact that the finger can never touch more than one letter at a time, while the eye takes in on the average seven letters at each movement it makes as it passes along the printed line. Reading by finger, then, is for physiologic reasons at least seven times slower than reading by sight.¹

¹ Persons interested in questions of this sort may refer to my articles on the physiology of reading which appeared in the *Annales d'oculistique* in 1878 and 1879; to my articles on the hygiene of reading, in the *Bulletin de la Société de médecine publique*, 1878, and in the *Compte rendus de la Société de biologie*, 1878 and 1879; to my article on books and myopia, *Revue scientifique*, November 22, 1879, and *Revue d'hygiène*, 1880; to my article on the evolution of typography, in its relation to the hygi-



But you will be told there is in each language an abbreviated spelling for Braille. To speak only of the French, the gain is about one-third ; but let us well understand : the abbreviation allows an economy of about one-third of the paper and perhaps a quarter of the time of the perfectly trained writer ; for reading, experience demonstrates that the increase of speed is nil.

About 1900 an American, Mr. Hall, made an excellent key machine for writing Braille. Three keys are worked by three fingers of the right hand and three others by three fingers of the left hand. One can see that by aid of this machine the speed of writing is the same for the most complex characters as for those made by a single dot. The objection to this machine is its cost (115 francs), its weight of several kilos, and the noise it makes.

These inconveniences will no doubt be
ene of vision, *Revue scientifique*, June 25, 1881, and *Revue d'hygiène*, 1881. See also Lamarre, "The Movements of the Eyes during Reading" (work done in my laboratory), *Compte rendus de la Société française d'ophtalmologie*, 1898, p. 354.

lessened one day. I do not think that the machine will ever do away with the use of the pocket tablet.

With the American Hall machine, or its like, you can write at least three times as fast as with the stylet.

To make arithmetical calculations, take either the reckoning slate of Schleusser of Nuremberg or a cubarithme of the National Institute, the use of which is handy also for the first study of Braille writing. One may also, in default of a cubarithme, set down the numbers in dots and then turn over the paper so as to be able to touch the points and set down the results in reverse. I refer for this matter to the volume of Barazer.¹

The adult who becomes blind will find great advantage in using Braille to take notes of brief facts gathered in conversation. I cannot picture myself deprived of my aluminum pocket tablet.

Unfortunately, the model of the tablet sold at the Institute is made for more adroit

¹ Le commandant Barazer, "Conseils aux personnes qui perdent la vue." In 8vo, Dunod, Paris, 1887.



fingers than mine. I have found it so very inconvenient that I use the pocket tablet almost solely to note proper names and figures. Accordingly, I have had one made for me which, in the same shape, has only six lines instead of nine, and sixteen letters to a line instead of twenty-three.

Braille serves me, too, to render recognizable by touch papers which I wish to preserve, as well as the strong paper envelopes in which I classify my documents. You can get at the Institution special paper of varying thickness at a moderate price. It is still more economical to use chance papers such as come from records and which are of excellent quality. The use of paper which has been written on is not noticed by the blind; it need be avoided only in intercourse between the blind and those who can see. For what is not intended to be saved or to go by mail, ordinary paper is quite stiff enough; with books, in spite of the use of very thick paper, it may happen that by use or a careless compression the points lose their relief.

It would take long to tell the means of learning Braille. I shall not go into it, as in such a matter the means of information are abundant. It is easy, besides, to learn Braille without a teacher, thanks to the exercise books which are on the market. I recommend especially that of Captain Mouchard, to be had at the Association Valentin Haüy, as well as a book of which I am the author, and which I compiled to facilitate the study of abbreviated French orthography.

When one wishes to learn Braille, he must give to it at the start as much time as possible. The best plan is for the first few days to do nothing else, up to the point of being haunted at night. Take each day many lessons, but not so long as to pass the limit of sustained attention or to tire the sensitiveness of the finger-tips. To read, make use of two indices, one beside the other, moving down simultaneously. Write and read alternately, and above all memorize the Braille table. By thus doing, in spite of a mediocre memory and one weakened by age, I think that every one can learn in

a few weeks to write and read sufficiently to get real advantage from it. Persons who find it too hard to recognize the letters of the usual size can make use, at least at first, of a tablet pierced with larger squares, for example, the so-called Prague model sold at the National Institution at Vienna. One can get from the British and Foreign Blind Association of London tablets making letters of very large size.

To sum up: the younger and the more isolated he is, the more it is important for the blind to familiarize himself with Braille, which, thanks to the considerable number of books found in every civilized country and notably to the important reading library organized for France by the Association Valentin Haüy, furnishes him with a considerable means of instruction and of distraction. Many are subscribers to the magazine *Le Louis Braille*, printed for their use.

Unfortunately the larger number of books, and notably *Le Louis Braille*, are printed in abbreviation; and unfortunately, too, there

exists such differences between the short form of different countries that very few blind persons are capable of reading abbreviation in a foreign language. Every one is agreed that it is well not to learn short form before being perfectly familiar with ordinary writing. Each one may then see if he wishes to throw himself into this complementary study.

Before studying the speed of reading and writing by the blind, it is interesting to bring together some approximate indications as to the speed of the various means which man employs to express his thought. When I say nothing to the contrary, I will admit, with the typewriters, that single words only are considered. For example *l'homme* counts as a single word. For writing of dactylography I admit that the writer must put in his capitals, accents, and punctuation ; the same for Braille.

It would not be hard to gather statistics as to the speed of mental reading, which is the habit of educated men. One will find considerable individual differences. For

want of exact information I will admit that one reads easily, without letting anything slip, five hundred words a minute.

We are better informed on the rapidity of speech. From what has been told me at the Stenographic Institute (150 Boulevard Saint-Germain, Paris), the slowest speaker utters more than one hundred words a minute, while the most rapid rarely says more than two hundred. A fair mean appears to be one hundred and sixty words a minute.

A skilled typewriter writes easily for hours forty words a minute. The record, made at the Exposition of 1900, is sixty-six words. One may say, then, that the speed of typewriting is about one-fourth that of reading aloud. I estimate the speed of a perfectly legible handwriting at twenty words, or about half that obtained generally by typewriting. A very rapid writing, omitting the accents and the dots over the *i*'s, but not the punctuation, readable without hesitation by the one who wrote it, may reach thirty-five words. You have seen above that with my planchette I can write twenty-five.

Skilled telegraphers send, in Morse, twenty-five words of five letters a minute, but they do away with capitals and accents. This is then a speed comparable to ordinary writing. The employee at the receiver of a Morse instrument who takes the message by hearing writes it easily with the pen. All are agreed in saying that by ear they understand telegrams when sent at much greater speed. The rate of Morse is limited only by the manual speed possible to the sender.

In 1856, a little while after the invention of Morse, a high official of the French telegraph, M. Charles Bourseul, had the idea that this alphabet could be used by the blind in preference to Braille, and he constructed an apparatus similar to the Morse key, acting without clockwork, by the aid of which one could write the Morse alphabet in relief. From the newer progress of telegraphy one could easily devise a similar instrument, where the signs are replaced by two lines of perforated dots, which would allow one to read *à l'audition*.

the strips obtained by the writing instrument.¹

Coming to Braille; of all writing it is the slowest, especially for one who comes to it late. I write four words a minute. The most skilled blind person scarcely exceeds eight; by the help of the short form none succeeds in passing ten and then at the cost of legibility, for in hurrying too much one makes mistakes and writes badly with raised dots, especially on tablets with lines.

The slowness of Braille is still more marked when it comes to reading. I manage to read twenty words; many born blind read sixty, a few reach one hundred, and now and then one, a hundred and twenty. M. de Menieux, librarian of the Association Valentin Haüy, has read in my presence almost two hundred words a minute. At the moment his right index finger reached the end of one line, his left had already passed over about half of the following line;

¹ *Instituteur des aveugles*, Guadet's journal, Vol. II, p. 140; "An Estimate by Ballu of the instrument of Bourseul," *ibid.*, p. 162.

so that almost all the time his mental reading by the left hand preceded by a variable time the reading of the right hand, which in turn probably preceded more or less the vocal reading. M. de Menieux agrees with his colleagues in saying that the reading of short form is much less rapid than that of Braille in full. The example of certain rapid readers ought not to make us forget the foregoing figures, according to which, even for those born blind, the reading is of such slowness that, if they are satisfied with it, it is because they have not tasted the pleasure of reading by sight which they who see enjoy.

What I have just said applies to French. It is evident that in German one would write fewer words a minute without perhaps being less skilful, for a German word has as many letters as several French words.

The English language is probably the most rapid. When one says "stop" for "*arrêtez*" or "bus" for "*omnibus*" or "go on" for "*continuez*," one can easily prick out many words a minute. Accordingly, at

the Chicago Exposition the record of type-writing was ninety-seven words a minute. As for reading English, according to a remarkable *mémoire* of M. Edmond B. Huey,¹ we see that a person has been able to read mentally more than eight hundred words a minute and three hundred aloud.

In résumé: leaving aside the more especially skilled professionals, those born blind write three times less quickly and read mentally at least five times less quickly than they who see; and as regards reading, the adult who loses his sight is far from being able to hope for such success. For him the inferiority of Braille is the more wretched that he has been accustomed to read rapidly; and above all to skim along, skipping words, sentences, or whole pages.

Historical. — Persons who wish details of the history of raised writing cannot do better than to begin by reading the two volumes in which M. Pagnerre has recently treated this subject. The manuscript with

¹ *American Journal of Physiology*, Vols. XI and XII.

which M. Pagnerre has enriched the Braille library is in short orthography and dated 1902. There is a résumé of it in the appendix of the volume published at the close of the International Congress for the Amelioration of the Lot of the Blind, held at Brussels in 1902.

In 1820 Prony presented to the Academy of Sciences a report on a system of writing invented by Captain Barbier.¹ At this time Barbier showed the superiority for the blind of a writing formed by raised dots. He produced this writing by means of a stylet guided, as is still done to-day, by the contour of a rectangular block. Under the

¹ "Rapport de Cuvier et Molard sur un Mémoire de Charles Barbier," pamphlet in 18vo, pp. 24, to be found in the Braille Library, 31 Avenue de Breteuil, under No. 118. This pamphlet contains the reports made in 1820 by M. de Prony and in 1823 by M. Lacépède.

Barbier, "Notice sur les salles d'asile, le retour à la simplicité primitive de la théorie alphabétique, l'instruction familière des enfants du premier âge, des aveugles de naissance et des sourds-muets." 8vo. Bachelier, printer, and Hachette, in the Elementary Classical Library, Paris, 1834. This work is also found in the Braille Library, and in that of the Institute, in a volume, "Mélanges de statistique," No. 259.

paper. a plate carried a groove the use of which is transmitted even to our time, at least in France.

Three years later MM. Ampère and Lacépède made a new report to the Institute. Barbier had brought two blind persons knowing how to read by his system. Surprised by the excellence of the result, the commissioners had one of the two go out of the room, and dictated a sentence to the other. On his return the first read at once without hesitation the phrase which his companion had just dotted. Thus the raised writing and the means of tracing it regularly are the work of Barbier, who, besides, had arranged the grooved plate so as to be at once displaced to allow the blind writer to make his own corrections. Braille has besides given him full justice in closing the preface of one of his books with the following sentence,¹ "Nous aimerons toujours à répéter que notre reconnaissance

¹ "Procédé pour écrire au moyen de points," 2d édition, Imprimerie de l'Institution royal des jeunes aveugles. Paris, 1837.

appartient à M. Barbier, qui le premier a inventé un procédé d'écriture au moyen de points, à l'usage des aveugles."

In the course of the twenty or twenty-five years which he devoted to perfecting raised writing, Barbier seems to have modified in several ways the disposition of the raised dots before determining on the square cell capable of receiving six dots. In a pamphlet to be had in the Braille Library, under No. 110 f. of the catalogue, there is a detailed explanation of the manufacture of Barbier tablets put at the disposition of the blind.¹ I will confine myself to showing one of his dotted notations, from a picture and volume belonging to the collection of M. Boissicat, Treasurer of the National Institute of Paris. The impression is perfect, and you will see that in this system an unlettered person can learn to read in a few hours. The corner-stone of this system is the following printed table, which must

¹ "Annales de l'Industrie nationale et étrangère ou Mercure technologique." Bachelier, 55 quai des Augustins, Paris, 1822.

be learned by heart, line by line. This labor of memory, the only one demanded by Barbier, is singularly facilitated by the logical and deductive arrangements of the letters written in the table, and which recall the articulations of the celebrated Couen de Prépéan, the father of French stenography.

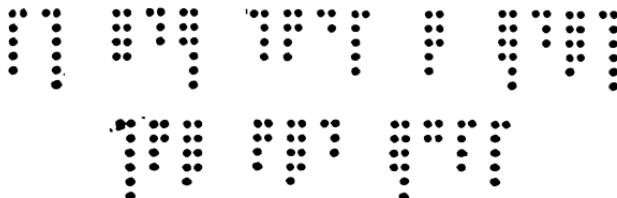
TABLE OF CHARLES BARBIER

1ST LINE	a	i	o	u	é	è
2D LINE	an	in	on	un	eu	ou
3D LINE	b	d	g	j	v	z
4TH LINE	p	t	q	ch	f	s
5TH LINE	l	m	n	r	gn	ll (soft)
6TH LINE	oi	oin	ian	ien	ion	ieu

For the blind each sign is composed of two lines of dots parallel and vertical. The number of dots in the left-hand row gives the number of one of the six horizontal lines of the table, and the number of dots in the right hand line tells the rank in the horizontal line of the letter type.

Here is the very sample given by Barbier:—

I



If he has taken pains the reader will be able to reconstruct the eight words of Barbier:—

Lè choz util n sorè ètr tro simpl (Les choses utiles ne sauraient être trop simples).

This arrangement is manifestly not propitious to rapid reading, and if I am rightly informed Barbier first made trial of our cell receiving only six dots.

It is to Louis Braille, pupil and later professor in the Institution in Paris, that we rightly attribute the choice of the combinations of six dots which constitutes our alphabet.

To my mind this choice has not been as fortunate as it might have been. Braille had received only the quite rudimentary instruction which the state then gave to its blind. It required him to put to the

service of an extraordinarily ingenious mind a rare patience to produce his systems of writing and musical notation. But obliged to draw everything from his own brain, the idea could not come to him of taking into account the necessities of other languages than French, or of the way he ought to leave open for abbreviated forms. These different abbreviative processes, says M. Moldenhauer, were conceived in different countries without having regard to other languages.¹

It is, then, to the adoption of orthographic writing by Braille that is due the heart-rending state of international relations between the blind; for the slowness of the Braille alphabet has been the Tower of Babel which has given rise to the confusion of national short forms, and I do not know a single blind person who can read two languages in short form.

The following is the table in dots of Braille. You will notice that the second, third, and fourth lines are derived from the

¹ Compte rendu du Congrès de Bruxelles, p. 162.

first, which we will call the type line, by the addition of one or two dots.

TABLE OF BRAILLE IN DOTS

•	• :	• ..	• ;	• .	• :	• ..	• ;	• .	• :
• :	• :	• ..	• ;	• .	• :	• ..	• ;	• .	• :
• ..	• ..	• ..	• ;	• .	• ..	• ..	• ;	• .	• ..
• ;	• ;	• ..	• ;	• .	• ;	• ..	• ;	• .	• ;
• .	• .	• ..	• .	• :	• .	• ..	• .	• :	• ..
•	• :	• ..	• ;	• .	• :	• ..	• ;	• .	• ..

Here now are the signs of printing or ordinary writing arranged in the same order as represented in the preceding table of dots:—

TABLE OF BRAILLE IN TYPE

1ST LINE	a	b	c	d	e	f	g	h	i	j
2D LINE	k	l	m	n	o	p	q	r	s	t
3D LINE	u	v	x	y	z	ç	é	à	è	ù
4TH LINE	â	ê	î	ô	û	ë	ï	û	œ	w
5TH LINE	,	;	:	.	?	!	Ø	"	'	"

By taking ten signs for his first line or type line, Braille had the advantage of being able to use this line as a whole for the ten ciphers.

The study of this writing is facilitated by the fact that it is sufficient for the pupil to learn by heart, on the one hand, the form of the ten first signs in dots, and on the other, the order of the fifty signs in the printed table. For those who, like myself, learn Braille at an advanced age, this facility is appreciable, but for the *ensemble* of blind persons it is dearly paid for by its inconvenience.

There is produced, in effect, in reading Braille, something analogous to what I have elsewhere pointed out in reading ordinary print. Cover the lower half of a printed line ; you will continue to read it without trouble, while you will be unable to make it out if you cover the upper half of the letters. Thus the glance of the trained reader passes along the heads of the letters, much more characteristic and varied than the bottoms. In the same way, when I

read raised writing, my finger grasps less the bases of the letters, and I chance to read a *c* instead of an *m* or an *x*. It is because the most sensitive area of the finger is less than the height of the common raised writing. I do not think I am alone in this. I believe, in fact, that the frequency of this inconvenience has had something to do with the creation of the New York point, in which the raised letters have only two dots in height, balanced often by having three in breadth.

Take note that the table of Braille comprises only fifty of the sixty-three signs which the rectangular cell may give.

The orthographic writing of Braille gained ground, thanks to the influence of Drs. Guillé and Pignier, Directors in the Institute, and that of Guadet, professor in the Institute, who by his journal, *L'Instituteur des aveugles*, served as a link between the school at Paris and the foreign schools.

It seems to me that these men were not on the right road when they abandoned the phonography of Barbier.

In the first half of the nineteenth century, without having any knowledge of the work of Barbier and Braille, an Austrian of the greatest merit, Klein, composed an alphabet formed by points legible by those who see as well as by the blind. The letters of Klein were five dots in height, which involved too great slowness in reading and especially in writing.

The "trait point" of Dr. Vezien and the beautiful alphabet of Dr. Mascaro constitute raised writing easy at once for the blind to trace and for those who see to read.

Everywhere else than in France they have replaced the grooves of Barbier by little cup-shaped indentations, which force the writer to hold his stylet quite perpendicular to the tablet, and as a result to form his dots correctly. Barbier had devised the grooves for reasons of economy in manufacture, which do not hold to-day; and I recommend the beginner to avoid the tablets made in France, to be sure of getting the habit, which is so important, of holding the stylet quite perpendicular to the paper.

XVII

CORRESPONDENCE WITH PERSONS WHO SEE

Two questions present themselves: to write without witness, and to obtain knowledge of the contents of a letter, while choosing the person by whom you have it read.

For the first question, you have seen how I got round the difficulty by means of my writing planchette. Again, one may have recourse to typewriting, or even, with regular correspondents, to Braille writing, on condition of having provided them with a model of the point alphabet. Those born blind can put on the address by using a special system serving to trace the usual characters in relief. For stamps, it is well to keep them sorted in a box with compartments, which you make recognizable by

marks. The letter once written, it is useful to carry it yourself to the mail without showing the address to any one, either by taking a guide, or, what is better, by learning to go alone to the nearest letter box.

Receiving letters offers more difficulties. It took me two years, for instance, to learn that the blind ought always to open his letters himself. Before opening them he can be told if there are any external marks, showing whence the letter came, such as business heading or postal mark. The very feel of a letter often gives some information of its nature. A begging letter on thin, poor paper is not easily confused with a note from a lady in a glossed envelope, which is often recognizable by a crest in relief or by its perfume. Again, external signs may be agreed upon with a regular correspondent.

The letter once opened, the touch may give definite information as to its nature; a printed prospectus does not give the same feel under the fingers as does a calling card, and one will not confound a check with a letter of request.

If the blind man has any doubt, which is generally the case, he puts the letter back into the envelope, reserving to himself the choice of who shall read it to him. Once the letter is read, I do not fail to mark on it with points a sufficient indication to recognize it later, and know by whom to have it reread when the time for replying comes.

I know one blind person who has his letters sent to him at the general delivery, then after getting the letter, he is driven in a cab to a remote quarter of town, where he has it read to him by a boy, who, not knowing him, can hardly commit the indiscretion of acquainting the blind man's household with what he would keep to himself.

Another way: you know that Braille correspondence may go in the mail under wrappers at printed rates; if the family of the blind man knows this writing, nothing is easier than to forego the lower rate and have his Braille letter sent to him under sealed postage.

Finally, if the blind and his correspondent both know a common foreign language, the

correspondent may write him in this tongue, taking care to make the letters of perfect legibility. Thus I have myself written in German, recommending that Latin letters be employed. If, as an extra precaution, which is far from being indispensable, my correspondent takes the trouble to replace the *u* by *ou*, the *ie* by *i*, any Frenchman can read me my letter in a perfectly comprehensible manner; all that is necessary for me is that he does not know German.

XVIII

MAPS, PLANS, AND SKETCHES

To execute a large sketch formed only with points, one may use the writing tablet, or, better, special tablets with square equidistant openings.

In schools for the blind they use, to teach geography, maps stamped in relief on paper, or, better, on celluloid, on which the blind can very well find their bearings, thanks to the variety of more or less strongly marked lines, variously pointed, which show the boundaries, the rivers, etc. They have also made maps by embroidery on canvas, or on perforated card-board, made for Fröbel schools, to be had in the stores.

Stamped maps covered with details are hard to read, for one who has not been accustomed to them from childhood, and besides, one can rarely find ready-made maps filling a special or sudden need. Few

blind are subscribers to a German *revue*, published in shorthand, which gave, in connection with its articles on the Spanish-American and China-Japan wars, relief maps with the fields of battle, the ports, and cities designated. One has even less hope of being able to get, ready-made, a plan of the city, the ward, or of the house wherein he lives.

To meet this need the firm of Carrière, 22 Rue Saint-Sulpice, Paris, has made at my request, with entire success, sheets of wax a little over a millimetre thick and measuring twenty by thirty centimetres. These sheets being transparent, nothing is easier than to make a relief map by placing them over the plan or map which interests the blind one. It is enough to apply over the lines which you wish to reproduce flexible wires, which the pressure of the finger embeds in the wax.

The wires which serve the best for this purpose are of lead. Their cost is next to nothing and their flexibility perfect, while the softness is such that they can be broken between the fingers in any desired length.

To diversify the lines, wires of three thicknesses may be used, varying from one to two millimetres. With the wires of about one millimetre you can make letters which, set in the wax, can be easily read by touch.

To increase the variety of lines, you may use guitar strings, the sixth and seventh, which are both pliable and tough, the core being of silk and the winding of fine metallic wire. You can also use string or bits of wooden or wax matches. There is nothing to prevent marking various points by lead bird shot, glass beads, or, even better, tacks.

The wax being very flexible, if you wish to keep the maps thus made, it is necessary to fasten them by tacks to thin, light boards of wood. You can use the same sheet of wax many times by taking out the embedded wires and smoothing out the surface with the thumb nail.

The wax sheets serve me also to make sketches myself, which is done without difficulty. I use a rule divided into centimetres by little notches, a square, and a compass.

M. Carl Schleussner, inspector at the Institute for the Blind at Nuremberg, showed in 1902, at Brussels, cotton thread covered with wax which he used to teach geometry. He was kind enough to send me a sample, which appeared to me perfect for making at once sensible the outlines of a map; but after some months the threads were dried out, and had unfortunately lost the property of adhering to the paper.

XIX

MUSIC

HAPPY the blind who have a taste for music, the only art within their reach. They find greater pleasure in it than the majority of those who have their sight. Accordingly, I shall not dwell on so evident a truth. Happier still are they who, before losing their sight, knew how to play some instrument and have a memory furnished with a number of masterpieces.

Persons who read rapidly before losing their sight are to be pitied, for music written in Braille can be read only very slowly, and naturally this reading leaves only one hand free. It takes the patience of one born blind to learn a piano piece, bar by bar, playing successively with the right hand and the left, while the finger of the other hand is passed along the signs representing the notes. I doubt if an adult musi-

cian becoming blind would ever have the patience to submit to such labor. Braille music writing, derived from the notation invented by J. J. Rousseau and which is in actual use at the Galin-Paris-Chevé school, is very remarkable. It is more rational than the usual music notation, takes no more space, and its cost is not excessive.

If he is sufficiently gifted, an old musician become blind can find the greatest pleasure in improvising. He can, with the help of some one who sees, or perhaps even with the aid of a phonograph, learn some pieces by heart; but if he learns Braille music, I doubt very much if he will get any profit from it, save in the most exceptional cases. I fear that he will have to resign himself to leaving to those born blind the labor of profiting from this admirable invention.

XX

GAMES

THERE is nothing to hinder a blind person from playing dominoes, chess, checkers, or cards, if he is gifted with a fair memory. If his memory is excellent, there is no trouble at all, since the great chess-players play without seeing the board, their adversary alone being with the board and making alternately his moves and those of the great player. Being endowed with a wretched memory, I cannot even play at dominoes, being unable to remember either what has been played or what dominoes I have in my hand. I have not even tried to play checkers or chess, for I am utterly unable to picture to myself the position of the pieces.

For the majority of blind players the game of checkers or chess is made very easy by means of boards on which each square has a little hole to receive the peg with which the

checkers or chessmen are provided. These sets with holes and pegs are to be bought, for they were invented for playing on railway trains. It is easy to imagine the slight change necessary to make the black pieces recognizable from the white. For those who do not like the pegs there are special checkerboards made with the squares of one color set deeper than the others. At the municipal school for the blind in Berlin, besides chess and checkers, there are loto, halma, etc.

Since the blind person who plays draughts or chess is constantly passing his hands over the game, it is better for his opponent to have a separate board.

There are playing cards recognizable by almost invisible needle pricks which give the blind the ability to play with those who see. One can get at the National Institute a little instrument for marking playing cards.

A blind person can amuse himself without any modification with the games of solitaire, ring puzzles, and *billard anglais*.

XXI

TOBACCO

ONE might think that the blind, not being able to see the smoke, would experience no taste for tobacco ; it is an error. I can attest to numbers of persons born blind who smoke cigarettes, and of inveterate smokers become blind for whom a pipe or cigar is an almost necessary complement of a dinner. A blind man, perhaps more readily than one who sees, may let his cigar go out without at once perceiving it. I have no experience with cigarettes or pipe. If I suspect that my cigar has gone out, I close my hand around it without touching it, and if the cigar still burns, the radiating warmth is readily felt.

For lighting I use coals, which are much more convenient than matches, for with these it is not easy to bring the end of the cigar in touch with the flame.

In my room I have ash trays placed here and there, in which, when I think of it, I put the ash to avoid letting it fall on the floor. At times, when moving about, I make use of one of the sputum flasks which are made for consumptives. With this in my pocket I can, wherever I may be, without incommoding any one, get rid of my ashes or the butt of my cigar, which, shut in the flask, goes out without spreading a bad odor.

In short, it seems to me that the chief practical advice to give to the blind who wish to smoke, is to select very dry cigars, which alone can be smoked slowly without fear of their going out. Often a cigar serves me to measure time when, in the presence of a stranger, I do not wish to feel the time on my watch.

XXII

MEMORY AND MNEMONICS

I RECALL having met, in my youth, wholly illiterate peasants whose memory seemed to me prodigious. They remembered year by year the character of the seasons. They knew the exact dates of small events in their life, and had stereotyped the exact remembrance of their receipts and expenditures. The inability of preserving anything by writing, and the long hours of monotonous manual labor, when their mind dwelt leisurely on the past, recalled it to their memory and engraved it on their brain. Herein, if I mistake not, are the special conditions which lead to these phenomenal memories, which so astonish the neighbors who are more favored as regards primary education.

The difficulty of taking notes and, above all, of consulting them, the long hours of

isolation, and absence of the distractions which the visible world brings, are analogous conditions, thanks to which a certain number of blind-born people become remarkable for their memory.

With the blind, memory is necessary for many acts of daily life. He needs more or less conscious memory to put his hand without hesitation on the door-knob, to give directions to the guide who takes him across the streets of the city, to know at a dinner the positions of the guests around the table. Many blind people make a very systematic use of their memory, and know, for instance, the number of steps in each portion of an accustomed walk, the number of treads in a stairway, etc.

To write, as I do at this moment, being unable to make erasures, it is necessary to construct each sentence practically complete before beginning to write. You must know what you have put in the preceding pages in order to make a subsequent summary without need to have read to you what has been written.

In place of referring to documents which he wishes to use, the blind writer is obliged to make himself absolute master of them in advance; and if his memory is poor, the task becomes much more difficult and the work loses in precision and vivacity. This very book necessarily shows these difficulties.

The feebleness of my memory obliged me to give special attention to the ways by which those who become blind late in life can clear themselves of these difficulties in personal work and not forget the engagements at fixed times in their daily life.

Here the pointed writing is an inestimable help. The pocket tablet permits one to put a short note on the letters he receives, as well as on the larger envelopes where he keeps papers relating to the same subject, and on the edge of the largest cases in which he classifies the envelopes. It becomes easy by this means, or by some similar device, for him to find, himself, all the papers he has collected and to have read by some one those to which he wishes to refer.

In a word, by perfect order and thanks to the help of raised writing, one can discount the weaknesses of the poorest memory.

For one who loses his sight late, the attempt to better his memory is rather chimerical and illusory, since with almost every one the memory, particularly for recent events, grows steadily weaker. This is one reason the more for having recourse to a precious help which I set myself to use when I lost my sight, and the employment of which seems to me particularly valuable. I speak of mnemonics.

I was present about 1862 at several meetings, where the extraordinary man who called himself Aimé Paris expounded the rules of his Mnemotechny.

I give the list which serves as a key to this mnemonic (persons who do not know Braille need only disregard the first line of the important table which follows):—

1ST LINE	•	•	••	••	••	••	••	••	••	••
2D LINE	1	2	3	4	5	6	7	8	9	0
3D LINE	te	ne	me	re	le	che	que	fe	pe	se
4TH LINE	de	gne			je	gue	ve	be	ze	

The first line contains the numerals in Braille, the second the same numerals in Arabic figures, the use of the third and fourth lines will be explained by the examples which will be given presently.

The principle consists in replacing the numerals to be retained (taken in line 2), by a group of syllables (in line 3 or 4) whose assemblage makes a word which it is sufficient to remember. In place of remembering a number, it suffices to remember a word, and to recall this word it is necessary to associate it with the event whose date you wish to recall, by some phrase which Aimé Paris prefers should be bizarre. The procedure not only serves to recall dates in history, but also telephone numbers, etc.

Example: to remember the date of the founding of Rome, I confine myself to recall "colline" by means of the idea that the city of Rome was built on seven hills. The word *colline* contains the articulation *que*, *le*, *ne*, which in the preceding table occupy respectively the places 7, 5, 2; I find 752, the date of the founding of Rome.

Another example: to recall the date of the invention of spectacles, I remember that spectacles were invented for the old, for *nos papas*. The articulations *ne*, *pe*, *pe* give by their position 299, and as we know that spectacles do not date so very far back, we have the date 1299, the first figure not requiring to be formulated in the mnemonic.

The mnemonic itself aids us in remembering in their order the ten syllables which form the key. Each one can devise a phrase, which he will recall the better the more silly it is. I imagine to myself, for instance, that I am going to seek my dog at the pound, he having been taken there because he was in the street without a muzzle, and touching the nose of the dog I say to him:—

Tu N^oas Mis Rien La, CHien Qui Fus PinC⁶
1 2 3 4 5 6 7 8 9 0

It is perfectly silly, and the more ridiculous you find it, the more you will be forced to remember. After all, this mnemonic is no stranger than the one commonly used in France to recall the subprefectures, or in

Germany to learn the multiplication table. You will see later on, in the chapter on stenography, my scheme for using the same ten articulations in the same order to form the type line of stenography, the signs remaining in Braille and keeping their numerical significance. The result is that the mnemonic serves as an easy base for stenography.

In mnemonics, as in stenography, the soft consonants correspond to the same order as the hard; *de* comes from *te*; *je* from *che*; *gue* from *que*; *ve* from *fe*; *be* from *pe*; and *ze* from *se*. Equally as in stenography, the mute consonants are considered as non-extant. By applying these two rules, if you wish, for instance, to recall the number 741 you may make use indifferently of the words *carte, garder, carder, carton, cordon, Corton, écourter, encroûté, garde, grade, agrandi*, etc., which gives a large choice.

A last example: to know by heart the perpetual calendar, Aimé Paris gave very simple formulæ. Here is one only, which gives the calendar of the current year:—

You associate with the names of the days of the week, beginning with Sunday, the numbers, 0, 1, 2, 3, 4, 5, 6 ; and to the months the following figures : 0 for January, 3 for February, 3 for March, 6 for April, 1 for May, 4 for June, 6 for July, 2 for August, 5 for September, 0 for October, 3 for November, 5 for December.

Let us suppose, to begin with, that the year begins on a Sunday. The numbers which have just been given show the day of the week with which the different months begin ; for example, the figure 3 which goes with the month of February indicates that the first of February is a Tuesday. Second example : the figure 0 belonging to October shows that the month of October begins on Sunday, as does January. All these numbers attached to the different months are not hard to remember. If you wish a mnemonic to help, you can say :—

Février trois (le mois le plus étroit).

Mars trois (même chiffre que pour février, ce qui est évident puisque le mois de février est exactement de 4 semaines).

Avril six (mois où l'on fait des *scies*).

Mai un (c'est de ce mois qu'à la campagne on plante à la porte du maire un mât qui porte le nom de mai et qui est droit comme le chiffre 1).

Juin quatre.

Juillet six (il fait bon d'être assis sous les arbres).

Août deux (il d'août d'être à deux).

Septembre cinq (mois des chasseurs assassins).

Octobre zéro (forme de la première lettre du mot octobre).

Novembre trois (le vin nouveau subit l'octroi).

Décembre cinq (Noël tombe le vingt-cinq).

When the year does not begin on Sunday, it is necessary to add to the characteristic number of the month the number characterizing the day on which the year begins. In leap years it is necessary after February to add a day to all the numbers.

XXIII

ESPERANTO

THE great majority of educated and intelligent blind persons with whom I have had to do have resolved to learn *Esperanto*, so that the use of this admirable international language seems likely to spread much faster among the blind than among other men.

It is polyglots who most appreciate Esperanto, although one would have thought that the need of an international language would be least felt by those who already know several languages. This tendency of polyglots to adopt the auxiliary language devised by Dr. Samenhof carries great weight, for persons who know several languages are alone competent to judge of the merits of a new idiom. The study of Esperanto, according to those who have devoted themselves to it, is very easy, and, contrary to Volapük, the language is har-

monious. By processes as simple as they are ingenious, Samenhoft has reduced to an incredible minimum the mental effort requisite for learning this language. What especially distinguishes Esperanto is that, if one limits himself to knowing how to read without a dictionary (a prime point for the blind), he can attain this in a few days if he gives himself to it wholly.

It seems to me that the usefulness of Esperanto ought to be much greater to the blind than to those who can see, and for two reasons.

In the first place, the use of short form in almost all countries brings this distressing consequence, that the blind loses the chief profit of his knowledge of foreign languages. I read freely French, German, English, and Italian, and can make out with Spanish, Portuguese, and Dutch. All this, including what remains to me of my Greek and Latin, is lost if I have to read a foreign publication printed in relief in short form. The difficulty of reading foreign tongues in short form is such that M. Monnier, Secretary of

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the International Association of Blind Students, is obliged to request his correspondents to write out words in full, or to use Esperanto. I do not know that there is in Paris a single person who knows how to read short-form raised German. This is an intolerable condition.

The second reason which makes desirable and probable the popularization of Esperanto among the blind is, that in each country the returns from books printed in raised type is too small to cover the cost of the publication.

With Esperanto all is changed. It becomes possible to print a weekly review for us, containing news of all kinds. We can be kept informed, among the productions of modern literature, of those works which, remarkable for their ideas or style, have been distinguished by the number of translations made into other languages. The translation of "Hamlet" by Samenhof shows the suppleness of his auxiliary language.

How should the blind set out to learn Esperanto? The reply to this question,

good at the time when I write these lines, would be wrong by the time they were read. The book at the head is the grammar of Samenhoft, of which I know only the French translation. This grammar, with the exercises which accompany it, I recommend without any restriction. If it cannot be had in raised type, have it read to you. You will find readily for this service some one who wishes to learn Esperanto. For this work the association of two or more persons of whom one is blind is perfect.

In any case, find out what may exist printed in raised points by blind Esperantists in the country where the blind person lives.

In France M. Cart, professor at the Lycée Henri IV, one of the most zealous advocates of Esperanto, has published in raised points a résumé of the grammar and part of the exercises of Samenhoft. Do not use the publications of Cart until you have read from one end to the other the complete grammar.

XXIV

MARRIAGE

OUGHT one to advise marriage for the blind?

It is not a question, be it well understood, of marriage between blind persons, which is contrary to the most ordinary good sense. It is the decision whether a blind man or woman should marry.

In the vast majority of cases the marriage of blind persons is not contraindicated by any fear of the blindness being hereditary. Having been consulted on this matter as an oculist, I did not limit myself to my recollections as a practitioner. I went through, before giving my reply, the many biographies of blind persons which are given in Mell's dictionary, and these researches were in accord with my own remembrances, confirming, that if there are cases of heredi-

tary blindness, they are so rare as to have escaped our investigations.

Nevertheless, it does not follow that the physician should give his approval to every blind person who wishes to marry. For the blind who have lost their sight by accident the question of heredity does not come up at all ; besides, the vast majority of cases of blindness are to be looked on as accidental. Smallpox, ophthalmia neonatorum, which are even to-day the great sources of blindness, have nothing hereditary. But if the blind person who wishes to marry has lost his sight from an affection of the optic nerve, the choroid, or even the retina, some care should be taken. For example, I would oppose the marriage of a person who had lost his sight from detachment of the retina with one who had a strong myopia, and if, besides, there existed any strain of relationship between the two, my opposition to their marriage would be unremovable.

Leaving aside, then, some quite exceptional cases, the physician ought not to oppose the marriage of the blind.

Once the medical question set aside, the other circumstances ought to be weighed with the greatest care. Unquestionably it is the rule, when the blindness comes on in the course of married life, especially if it be the husband who is stricken, to see the conjugal affection deepened by compassion; the blindness of one of the pair rarely fails to strengthen preexisting bonds. As to contracting a marriage, the question is quite different. It has been set forth in its various aspects in "*Les Emmurés*," the beautiful novel of Lucien Descaves.¹

As a fact, among the blind, the marriage of girls is much less frequent than that of men, which conforms to the psychology of the two sexes; and I believe that as a rule the matches thus made are successful. More frequently the young woman has known at the start the import of the engagement which she has undertaken, and the conditions of the contract being reversed, she gives aid and protection to her husband.

¹ Stock, Paris, 1895.

It is a pleasure for me to close this chapter by the translation of a very beautiful letter sent me by one of my correspondents :—

“Under many circumstances the decision will be dictated by the age, the health, the financial position, etc. Blind girls will generally do better to forego marriage. Margaret Wilhelm, the wife of a railroad crossing guard, has poured out her feelings in a poignant poem, ‘L’alouette de Birchow.’ A blind man who marries exposes himself to wretched moments ; it will be for him one of the saddest privations never to see the looks of his wife and children. He will often have the feeling of not being able to fill as he would like to the duties of a husband and father ; he takes upon him burdens which the bachelor has not. Nevertheless, marriage seems to me desirable when circumstances are favorable. Not only is feminine aid almost indispensable to him, but he has more than other men the need of living among beings whom he can call his own, in whom he can have confidence,

and who surround him with affection. Family life is for him a source of pure happiness. As for myself, I cannot think without gratitude of all the joys which I experienced in the midst of those who are dear to me."

However that may be, before marrying the blind will do well, under pain of lamentable consequences, to have it considered twice by some devoted friends.

XXV

THE SIXTH SENSE

IT is not without apprehension that I have written the words *the sixth sense* at the head of this chapter, for it is very possible that the facts in question may be explainable by the five senses.

On the other hand, in the present state of our knowledge, it is doubtful whether the persons for whom this book is intended can draw any immediate or practical benefit from reading this exposition. Nevertheless, it has seemed useful here to set forth the information I have been able to gather concerning "the sense of obstacles," in the hope that some one of my readers will be led to write me, for insertion in a second edition, the facts he may have observed or the experiments he may have made, the knowledge of which would be such as to

extend the ideas we have of perceptions which the blind can make use of.

Exposition of facts.—Every one who has carefully observed blind persons knows that there are among them some completely blind who have, more or less developed, what they call the sense of obstacles. One sees children run about in their play without bumping into trees; this faculty is present with them even in a place where they find themselves for the first time. Walking in a passageway, they recognize without hesitation whether a door across their way is open. I am even assured that some of them have this sense sufficiently developed to allow them to count the windows of the first floor of a building which they are passing in front of. This perception of obstacles makes one think of the experiment of the celebrated Spallanzani, who saw bats continue to fly about, without striking themselves, after he had taken out their eyes.

The sense of obstacles is very clearly mentioned in a number of biographies of blind persons. The oldest description

which I know is found in Diderot's "Lettres sur les aveugles."

Most frequently the blind assert that the seat of the sensation which we are considering is chiefly the forehead: they never speak of experiencing it in the hands. There are some who attribute the sense of an obstacle to the pressure of the air, which is incorrect, for those whom I have asked affirm that the perception is sharper when they approach slowly the object whose facial sensation gives them warning of its presence. This sensation is always vague, and according to the expression of some blind people subject to mirage; that is to say, they sometimes stop short in their walk with the fear of striking themselves, when they are not in the neighborhood of any obstacle.

Before hazarding any explanation of these facts, I will say that the authors are far from being agreed: some tax their ingenuity to attribute them all to auditory sensations; others do not allow the auditory sense any rôle in the process; others admit

that the tympanum acts as a receptor without there being any auditory perception; and finally, some blind people have told me that they believed in simultaneous action of auditory and other sensations, the respective rôles of which it was impossible for them to determine.

First, the facts which I have been able to gather. The reader will please note the divergence of opinion on the effect of snow.

M. G., Professor of History at the National Institute of Paris, lost his sight at the age of four years from atrophy of the optic nerves. Complete absence of smell. He distinguishes light from darkness and at times perceives dimly large objects. No perception from radium. A first-class observer, M. G. enjoys beyond possible question the sense of obstacles, thanks to which, for example, when going along a street, he is sure of not running into either trees or lamp posts in front. He avoids even in the country the large piles of stones along the roadside. He senses more than two metres away the presence of a wall. In my pres-

ence he recognized in the middle of a room a large piece of furniture which he thought was a billiard table. We determined that the mass of the object influences his perception. A sheet of paper does not make the same impression on him as a thick book of the same form. He states that at home the sense of obstacles is much more distinct in complete darkness; there is, therefore, no possibility that the perception of large objects is due to the visual sense. For him, as for many others, the sense of obstacles disappears in noisy surrounding.

Following this case, which I observed at first hand, here is one sent me by a very sagacious observer: —

“I know in my neighborhood a young man of twenty-seven, blind from the age of two, very intelligent, who has just finished his education and apprenticeship in the trade of a music tuner. He is his own guide and goes about alone on his routes. His village is four kilometres from mine; when he comes to see me he walks very rapidly and without hesitation turns at a right angle

when he comes abreast of the road which leads to my house. It is the sense of hearing which leads him to avoid obstacles.

"When there is a high wind shaking the leaves on the trees along the road, he sometimes strikes against obstacles he would avoid in a calm. The confused noise of the foliage deadens the sound of his footsteps.

"In the same way, when there is snow he does not hear any echo from the trees along the road, and he is obliged to strike his hand against his thigh to make a noise, the echo of which, sent back to him, reveals the neighborhood of obstacles.

"I have made him try the following experiments: the first time I placed him in front of a wall and had him turn around several times and then asked him, 'Where is the wall?' He replied, 'Your voice is echoed back to me by the wall, which is there,' and he indicated very exactly the direction of the wall.

"In a second experiment I placed myself between the blind fellow and the wall, after placing under his feet a carpet to deaden

strange sounds. I made him turn around several times after telling him to indicate to me the obstacle as soon as he should stop turning. Without waiting for my question he seemed to hesitate a moment. I had stopped him with his back to the wall. He replied, ‘The wall is . . . behind me.’

“I asked him the reason for the hesitation in his reply? He said, ‘At my first words, “the wall,” I did not hear my words strike against an obstacle in front of me; so I concluded that the obstacle was behind me.’”

Another blind man of my acquaintance, who has difficulty in orienting himself when there is snow on the ground, has told me that he is much troubled in going about the house if he has on felt slippers.

I take the following from a letter of M. Imbert, professor in the Faculty of Medicine at Montpellier :—

“I have begun some experiments with a blind professor in the Institute of Montpellier, who has not the least light perception. He acquainted me with a fact peculiar to himself, which I think will interest you.

M. Ferrari, the blind man in question, during a thunder storm distinctly perceives a flash of lightning before hearing the thunder, and it has nothing to do with light perception. M. Ferrari cannot otherwise characterize the sensation which he then has, but it exists and does not deceive him. This seems at first most hard to explain, but the explanation must be sought, I believe, in the known domain of physics, and ought to be in accord with the variations in the electric field which occur during a thunder-storm. In any case this explanation will be perhaps very hard to prove by experiment."

This passage from M. Imbert is the most interesting since he is much given to explaining by audition most phenomena which concern us. He has made experiments similar to those of William James, which will be spoken of farther on.

I have kept for the last a much more complete case than the preceding ; that of W. Hanks Levy, cited by William James.¹

¹ "Principles of Psychology." Macmillan & Co., London, 1891, Vol. II, p. 204.

A blind man, Mr. W. Hanks Levy, author of a work entitled "Blindness and the Blind,"¹ tells us in the following manner of his faculty of perception :—

"Whether within a house or in the open air, whether walking or standing still, I can tell, although quite blind, when I am opposite an object, and can perceive whether it be tall or short, slender or bulky. I can also detect whether it be a solitary object or a continuous fence; whether it be a close fence or composed of open rails; and often whether it be a wooden fence, a brick or stone wall, or a quickset hedge. I cannot perceive objects if much lower than my shoulder, but sometimes very low objects can be detected. This may depend on the nature of the objects, or on some abnormal state of the atmosphere. The currents of air can have nothing to do with this power, as the state of the wind does not directly affect it; the sense of hearing has nothing to do with it, as when snow lies thickly on the ground objects are more distinct,

¹ London, 1872.

although the footfall cannot be heard. I seem to perceive objects through the skin of my face, and to have the impressions immediately transmitted to the brain. The only part of my body possessing this power is my face; this I have ascertained by suitable experiments. Stopping my ears does not interfere with it, but covering my face with a thick veil destroys it altogether. None of the five senses have anything to do with the existence of this power, and the circumstances above named induce me to call this unrecognized sense by the name of facial perception. . . . When passing along a street I can distinguish shops from private houses, and even point out the doors and windows, etc., and this whether the doors be shut or open. When a window consists of one entire sheet of glass, it is more difficult to discover than one composed of a number of small panes. From this it would appear that glass is a bad conductor of sensation, or at any rate of the sensation specially connected with this sense. When objects below the face are perceived, the

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sensation seems to come in an oblique line from the object to the upper part of the face. While walking with a friend in Forest Lane, Stratford, I said, pointing to a fence which separated the road from a field, 'Those rails are not quite as high as my shoulder.' He looked at them and said they were higher. We, however, measured and found them about three inches lower than my shoulder. At the time of making this observation, I was about four feet from the rails. Certainly in this instance facial perception was more accurate than sight. When the lower part of a fence is brickwork, and the upper part rails, the fact can be detected, and the line where the two meet easily perceived. Irregularities in height and projections and indentations in walls can also be discovered."

William James adds that with Levy the perception is diminished during a storm, but remains intact in darkness. (I know a blind man who is similarly affected.) He adds that Levy did possess the faculty of recognizing if a cloud obscured the horizon,

but that, with him, this sensation, which exists in other blind persons, has wholly disappeared.

The preceding facts are far from being numerous enough to put us in the position to grasp the mechanism by which the blind perceive the presence of obstacles. Nevertheless, it is impossible to read them without thinking of the celebrated discussion of Lord Kelvin upon the six doors of knowledge.¹ What follows is not in contradiction to the ideas of Lord Kelvin.

Man possesses six senses and not five. It is not at all correct to put heat perception into the *ensemble* known under the name of tactile sense. The seat of these sensations is different, as proved by a disease of the spinal cord known by the name of *syringomyelia*, which shows itself by the loss of heat sensation with the preservation of the tactile sense. It requires the contact of ponderable bodies to give rise to auditory sensations in us, as sound is not transmitted

¹ William Thomson (Lord Kelvin), address given at the Birmingham and Midland Institute, October 3, 1883.

across a vacuum. It is probably the same with odors; and touch properly so called, as its name indicates, is exercised only by contact. It is entirely different from vision, which renders perceptible the vibrations of a certain part of the spectrum. Besides, our skin is affected by invisible portions of the spectrum. The sunburn produced by reflection from the snow or from the electric arc, and whose appearance is not often accompanied by any sensation of warmth, is generally attributed to the action of the ultra-violet rays. On the other hand, and it is just this which interests us here, the infra-red rays produce a heat effect.

The notion of radiant heat is common. A sensation of heat is experienced by our skin without its being in contact with a hot body. Who has not enjoyed the impression of warmth produced on our organs by a clear sun enlivening a beautiful summer day? Seated in front of a hearth in the coldest room, a bright fire can warm our face to such a point that it is pleasant to protect it with a screen.

If the frontal sense is a phenomenon of radiation, the subjects who possess it could increase it by blackening the forehead with lampblack. Every one knows that black clothes make us more sensitive to the solar radiation.

It would be interesting to find out if obscure radiations do not play some part in the perception of obstacles by the blind. A fact cited by William James does not look favorable to this hypothesis:—

“A blind man, Mr. Kilbourne, teacher in the Perkins Institute, South Boston, who possesses to a remarkable degree the power of perceiving clouds, has been found not to have on his face a sensibility to heat greater than other persons.”

But after trial made by closing the ears carefully, it was proven that with Mr. Kilbourne the sense of obstacles rested upon auditory phenomena.

To the preceding theoretic ideas, which differ little from those of Lord Kelvin, I will add that embryologically the retina is related to the cutaneous epithelium: one

may then conceive that this epithelium in the frontal region might be lightly affected by a certain extension of the spectrum whose limits are not the same as those of the luminous spectrum, and may even be very far distant from it. It was for this reason that I tried whether the skin of the forehead on blind persons would be affected by the rays emitted by radium. The result of this experiment, of which far too much noise was made in the papers, was negative.¹

Practical application. — It would be perhaps useful, and surely interesting, to search for the means of calling forth and developing in the adult this sense, which so far, it seems to me, has been the privilege of those who have lost their sight at an early age.

As the first basis of this study it seems logical to find out the conditions most favorable for its exercise in those who possess this perception. We would then try to place the adult under the same conditions.

Unfortunately, the few facts which I have

¹ *Vide* Bulletin de l'Académie de Médecine de Paris, Séance of April 1, 1902.

gathered so far are neither precise nor in accord.

A short while after losing my sight, as I heard this sense of obstacles spoken of, I made some trials to see if its application could be of some use to me. These trials gave a negative result, and by a rash generalization I came to believe that this sense is the privilege of those born blind, when I received from M. Leon, in whom this sense is strongly developed, a copy of James's book, already several times quoted, with the following passage marked :¹—

“The membrana tympani is susceptible of noticing differences of pressure exerted by the external atmosphere, differences much too small to be possibly distinguished as a sound. After being seated and having the eyes closed, let the reader ask some one to bring silently before his face an object like a large book; he will at once have a consciousness of its presence as well as of its removal. A friend of the author, trying this for the first time, distinguished without

Loc. cit., p. 140.

hesitation the three degrees of thickness of a board, a trellis, and a sieve held successively before his ear. Since they who see never make use of this sensation as a means of perception, we can admit that, for those whose attention is called to these phenomena for the first time, this appreciation is a quasi-sensation and owes nothing to the education of the senses. But what is perceived is very clearly and without denial the absence of limitation of space, quite as when lying on the back one perceives nothing but the blue and limitless extent of sky. When some one brings an object to our ear, we at once experience a sense of imprisonment or shut-in-ness. If the object is suddenly taken away, it seems as if we were freed and in the presence of free space. And to whomsoever takes the trouble to try it, this sensation will be that of a vague appreciation of space."

William James adds this note: "The proof that this sensation is tactile rather than acoustic seems to follow from the fact that a physician, a friend of the author, nearly

deaf in one ear, although the two tympana are normal, feels the presence or removal of an object as well with one ear as with the other."

From these few lines I conclude that others more gifted may succeed where I have failed. I point them out a subject for study. It is presumable that by varying the nature of the objects employed one will be able to discover the most favorable conditions for the birth of the perception which is the subject of this chapter, and that, the first step being the hardest, these trials may terminate in results having a practical utility.

XXVI

PSYCHOLOGY OF THE BLIND

EGOISM and vanity are the prime motives of human actions: with the blind these faults sometimes assume excessive proportions. It is quite natural, indeed, that the blind, deprived of the most efficient means of self-defence, should be especially self-centred and preoccupied with the help that he can attract or demand from another; that he should think more of himself than of others better armed for the struggle. The vanity which one often meets in him finds its chief nourishment in the wonder expressed by those who notice every time he does anything alone.

After all, is vanity a vice? Is it not rather a motive which often leads to well-doing? That the blind should devote himself to useful pursuits, that he should have the desire of working for another, that he

should provide for the needs of his family in spite of his infirmity and take pride in it,—where is the harm?

“The moralists have said, ‘Choke out thy pride.’ I say, ‘Justify it; it is the secret of all great lives.’”¹

A characteristic trait of the blind is to reflect much, to ruminate, so to speak, on the past, and to draw logical deductions therefrom; it is not uncommon, then, for a blind man to be a person of good counsel, above all if he has lost his sight late. Accordingly an intimacy between the blind and little children, so pleasant for him and profitable for them, is not a very rare sight.

The blind are often encouraged by a very living religious faith. This is not surprising, for, accustomed to accept the reality of things they do not see, they believe easily in the immediate presence of an invisible God and incline to a mysticism which can lift them away from the things of earth and humanity.

When a young man first loses his sight, he

¹ Daniel Sterne, “*Esquisses morales et politiques.*”

should be left in an asylum for the blind only for the time absolutely necessary. This very special surrounding is indeed particularly unsuited to the development of the qualities necessary for ordinary life.

It has been interesting to me to inform myself on the inner life of the blind, and better than in special works¹ I have found these indications in the works of the realistic novelists. I have read with interest the "Musicien aveugle" by Korolenko,² and have quoted above with praise the "Emmurés" of Lucien Descaves.

Along a special line of ideas, the novel of Marc Monnier,³ "Entre Aveugles," presents the impressions of one born blind who has just received his sight as the result of an operation. The writer was inspired by the celebrated relation of Jurin, in the *Optique de Smith*, of the impressions of a blind man

¹ There is a long list in the "Encyklopädisches Handbuch des Blindenwesens," by Professor Alexandre Mell. 2 vols. in 8vo, Pichler, Vienna and Leipzig, 1900.

² Volume of stories entitled "La Forêt murmure," French translation. Armand Colin, Paris, 1895.

³ "Le Charmeur." Charpentier, Paris, 1882.

who had his sight restored to him some two hundred years ago by the oculist Cheselden. This observation has been related more or less completely in the works on physics, physiology, and psychology, notably in Helmholtz's "Optique physiologique."¹

Under the title of "Roman d'une aveugle,"² M. Dufau, who was for a long while Director of the Institute du boulevard des Invalides, has written a volume of fiction in which he has made use of observations gathered in real life.

Most writers, and above all poets, who are blind make the mistake of trying to picture visual sensations which they know only by hearsay. M. Guilbeau, in his "Chants et légendes de l'aveugle,"³ avoids this error, and I will say as much of Mme. Galeron de Calonne, who is blind and almost wholly deaf. I cannot resist the pleasure of quoting a few stanzas from this remarkable woman.⁴

¹ Translation by Javal and Klein. Masson, Paris, 1878.

² "Le roman d'une aveugle-née." Paris, 1851, à l'Institution nationale. ³ Paris, 1894.

⁴ "Dans ma nuit," Alphonse Lemerre, Paris, 1897.

“RÊVE D'AVEUGLE”

“Quand le sommeil bénî me ramène le rêve,
 Ce que mes yeux jadis ont vu, je le revois ;
 Lorsque la nuit se fait, c'est mon jour qui se lève,
 Et c'est mon tour de vivre alors comme autrefois.

* * * * *

“Êtres mal définis, choses que je devine,
 Tout cesse d'être vague et vient se dévoiler,
 C'est la lumière, c'est la nature divine,
 Ce sont des traits chérîs que je peux contempler.

“Et quand je me réveille encor toute ravie,
 Et que je me retrouve en mon obscurité,
 Je doute et je confonds le rêve avec la vie :
 Mon cauchemar commence à la réalité.”

“QU'IMPORTE !”

“Je ne la vois plus, la splendeur des roses,
 Mais le ciel a fait la part de chacun.
 Qu'importe l'éclat ? J'ai l'âme des choses ;
 Je ne la vois plus la splendeur des roses ;
 Mais j'ai leur parfum.

“Je ne le vois pas ton regard qui m'aime
 Lorsque je le sens sur moi se poser.
 Qu'importe ! un regret serait un blasphème.
 Je ne le vois pas ton regard qui m'aime.
 Mais j'ai ton baiser.”

* * * * *

That is something above the common, and the example of this beautiful serenity ought to bring shame to those whom the loss of sight plunges into a gloomy despair. Each one willingly believes that blindness is a much greater misfortune for him than for his neighbor. Instead of comparing our lot with that of those who can see, would we not do better to turn our thoughts toward those who in their night are delivered at the same time over to deafness, to the wretchedness of dark and solitude?

Near the beginning of "Stello" some lines justify the prejudice that the blind are happier than the deaf. They are:—

"If the deaf seem to us always gloomy, it is because we only see them at the time when they are deprived of the speech of men; and if the blind appear always happy and smiling, it is because we see them at the time when the human voice consoles them."

I share fully the opinion of Alfred de Vigny. The difference of which he speaks is still more marked if it concerns persons who have lost a sense they previously en-

joyed. Deafness does not wreck a man's career as does blindness ; it leaves him free, while the blind man is at the mercy of some one else. The deaf man can let himself be morose ; the blind man is obliged to appear amiable. One may say, then, that if the blind is more affable than the deaf man, if he tries to appear contented, if he is sociable, this is rather the index of the fear he has of being left alone in his darkness.

I should admit that a contrary opinion has been expressed to me by Mme. Galeron de Calonne, whose blindness and deafness go back to the age of five years. I attribute her opinion to the fact that her deafness, not being absolute, she is daily impressed by the imperfection of her hearing.¹

¹ Mme. Galeron, during a few months when her deafness was total, communicated with her husband by means of the signs of the Morse alphabet. This communication took place in certain instances without the knowledge of assistants or even at a distance, by jogging a table. Inter-course with people being possible to her only by contact, she has acquired an extraordinary memory of various hands and come to recognize in this way a person after several years' interval. One of her daughters had the idea

Among men who are free from material anxieties, those who have never taken thought save of their pleasures and their own affairs are the most unhappy when they lose their sight. By a sort of distributive justice, those, on the contrary, who have set before them as the chief aim of life to contribute to the extent of their power to the general progress, find resources in themselves; every one, whatever his social position and his intellectual faculties may be, can always find satisfaction in contributing to the happiness of another.

Men of science occupy a privileged position; they have, in fact, a whole fund of acquired knowledge which they can make use of. So long as they can still bring their stone, however small it may be, to the building of civilization and progress, they feel that they live; and whatever be the wounds received, they are not *hors de combat*, — the inequality of arms only increases

of speaking to her into her hand, and she succeeded in thus getting several words, probably by feeling the movements of the lips and the expired air.

their ardor. More happy still if, by increase, their work having been of use to some one, they can repeat with serenity the words of Ecclesiastes, "My heart rejoiced in all my labor; and this was my portion of all my labor."

XXVII

USEFUL ADDRESSES

In all countries one necessarily goes to the special schools for the blind to obtain most articles useful for the blind, such as tablets, soft paper, maps, games, etc.

Thus one finds at the National Institution in Paris, 56 Boulevard des Invalides, rules, tablets, styles, cubarithmes, paper, and a certain number of classic books, all at a price given in a printed catalogue.

The so-called Prague tablet can be had at the K. K. Institute for the Education of the Blind, 1½ Wittelbachstrasse, No. 5, Vienna, Austria. The price is 4.50 marks.

The Institute at Berlin is particularly well supplied with games.

There are, besides, special associations for the help of the blind, such as the Association Valentin Haüy, 31 Avenue de Breteuil, Paris; the British and Foreign Blind Associa-

tion, 33 Cambridge Square, W., London ; the International Association of Blind Students, 10 Champel, Geneva ; the special establishment of Dr. Sommer, 7 Greves Garten, Bergedorf, near Hamburg, Germany, where one is sure to meet with a cordial reception.

A catalogue of books in raised points can be had at the British Association and at the Association Valentin Haüy. The first sends, on request, a catalogue of the articles it has on sale ; the second has organized a service for lending books, with stations in several cities. From them one can get, besides the works of M. de la Sizeranne, the book of Captain Mouchard for the use of adults who wish to learn Braille alone, and that of Dr. Javal for the study of shortened form.

Hotels recommended for the blind are : in Paris, the furnished apartments at 4 Rue Bertrand, quite near the Institute (7 francs a day) ; and in London the *pension* of Miss Blott, 30 Saint Charles Square, North Kensington, London, W. (150 francs a month).

Watches for the blind can be had, in

Paris, of Ledoux, Place Saint-André-des-Arts (30 francs), and of Hass, Boulevard Sébastopol; in Strasburg, of Biettner Oscar, Alter Fleischmarkt, 40.

Tandem tricycles are sold at the Société Français, 16 Avenue de la Grande Armée Paris (600 francs).

Wax tablets are made by the firm of Carrière, 22 Rue Saint-Sulpice, and 54 Rue de l'Abre Sec, Paris.

"La méthode de lecture" (honored by the highest award at the Exposition of 1889) is sold for 0.30 franc at Picard and Kaan's, 11 Rue Soufflot, Paris.

Finally, one can get the planchette for writing from Giroux, 19 Rue de l'Odéon, Paris (40 francs).

APPENDIX

BOOKS AND LIBRARY FACILITIES FOR AMERICAN READERS

THE institutions for the blind in the various states of the Union, while maintained chiefly for the care and education of the young blind, will all give information to adult persons becoming blind as to the means at their disposal for teaching them to read, and can direct such persons how to obtain books and appliances.

The American Printing House for the Blind, Louisville, Ky., publishes a very considerable list of school books upon all subjects, as well as volumes on general literature, history, poetry, science, and embossed music. These volumes are printed in Line letter, New York Point, and American Braille. They also have appliances for the use of the blind in writing, etc.

A full catalogue is published, and also an embossed price-list can be had for twenty-five cents.

The Society for providing Evangelical Religious Literature for the Blind, 3518 Lancaster Avenue, Philadelphia, Pa., publishes a number of volumes of religious writings and also a Sunday-school weekly in two editions, one in Line, and one in

New York Point. Upon the written recommendation of a superintendent of the Sunday-school for the blind a copy may be sent free to any indigent worthy blind person in the state of Pennsylvania.

The Perkins Institute for the Blind, in South Boston, Mass., has a salesroom at 383 Boylston Street, Boston, where supplies may be had. At the Institute in South Boston there is a large library from which books are lent to be read at home. The librarian, Miss Lane, will gladly answer any questions about the use of this library.

The Perkins Institute also sends free of charge, to any one in Massachusetts, upon application, teachers to instruct in reading. These teachers are blind themselves, and are sent, men for men, and women for women.

The general library facilities of the United States are the more available to the blind who may not have direct access to a library by reason of the following order of the Post-office Department, made for the benefit of the blind who may be entitled to borrow books from any institution for the blind or from any library containing embossed books.

"ORDER OF THE POSTMASTER-GENERAL

"Office of the Postmaster-general,

"Order No. 541. "Washington, D.C., June 2, 1904.

"Chapter 2, Title III, of the Postal Laws and Regulations, is hereby amended by the addition of the following subdivision:—

"V. READING MATTER FOR THE BLIND

"Sec. 518½. Books, pamphlets, and other reading matter in raised characters for the use of the blind, whether prepared by hand or printed, in single volumes, not exceeding ten pounds in weight, or in packages, not exceeding four pounds in weight, and containing no advertising or other matter whatever, unsealed and when sent by public institutions for the blind, or by any public libraries, as a loan to blind readers, or when returned by the latter to such institutions or public libraries, shall be transmitted in the United States mails free of postage, and under such regulations as the Postmaster-general may prescribe. (Act of April 27, 1904.)

"2. Reading matter in raised characters for the use of the blind, to be entitled to transmission in the mails free of postage, must not contain any advertising or other matter whatever, and must in every case be sent by or returned to a public library, or public institution for the blind.

"3. When mailed by a public library, or public institution for the blind, the matter must be sent as a loan to a blind reader. When mailed for return to a public library, or public institution for the blind, the sender must be a blind reader.

"4. The matter must be wrapped so that it may be easily examined.

"5. No package is to weigh more than four pounds, except in case of a single volume, and it must not exceed ten pounds in weight.

“6. On the upper left-hand corner of the envelope or wrapper containing the matter the name and address of the sender must appear, and on the upper right-hand corner the word ‘free’ over the words ‘Reading matter for the blind.’

“NOTE.—Letters written in Point print or raised characters used by the blind are not included in the reading matter entitled, under the provisions of this section, to free transmission in the mails. (See section 475.)

“H. C. PAYNE,
“*Postmaster-general.*”

The usefulness of the libraries in the large cities is thus greatly extended. Some of the chief provisions made for the blind are:—

The Library of Congress, Washington, D.C., maintains a large airy reading-room on the ground floor. There are 834 books, grouped as follows: New York Point, 434; Line type, 357; American Braille, 35; and Moon type, 8. There are eight magazines and also embossed music. Books and music are delivered and exchanged at the homes of the blind, but are not loaned to persons living outside the District of Columbia.

The Boston Public Library has a good many volumes in Braille, New York Point, and some in Moon type. They take three magazines published in England for the blind. All the volumes are kept in the stack, as the use of them when kept on the tables in the reading-room was very limited.

These books for the blind may be kept by borrowers for four weeks, double the usual time allowed.

The magazines are: *Recreation*, edited by Florence Nevill, Braille. *Progress*, edited by George W. Boyle, Braille. *Hora Jucunda*, edited by W. N. Illingworth, Edinburgh, Braille.

The New York Public Library has in its Circulating Department a branch for the exclusive use of the blind. This was established in 1895 as an independent organization, the New York Free Circulating Library for the Blind, and came into the control of the Public Library by consolidation in January 1, 1903. The branch now has on its shelves 2365 volumes, of which 161 were added the last year. The circulation for the last library year was 8057, and the whole number of names of users on the registry book is 319. The staff of the branch includes a teacher whose business it is to seek out blind persons who do not know how to read and give them instruction free of charge. The books are chiefly in New York Point, though there are many also in the Moon system, Boston Line, Braille, and others. Pending the completion of the new library building, this branch is situated in a room in the Parish House of St. Agnes Chapel in 91st Street. The books are lent free to all residents of New York City.

The Pennsylvania Home Teaching Society and Free Circulating Library for the Blind was founded in 1882, with the object of providing a library of

embossed books in the Moon type, and sending teachers to the homes of the blind for the purpose of teaching them to read, and periodically exchanging their books. For sixteen years the work was most successfully carried on in Philadelphia, under the superintendence of Mr. John P. Rhoads; but in order to place it upon a more permanent basis, the Society was reorganized in 1898, and the Trustees of the Free Library of Philadelphia have undertaken to coöperate with them, by taking charge of the library of embossed books belonging to this society for the blind, as well as consenting to superintend the loaning of the books to the blind upon the Society's roll of readers, all expenses connected with the home teaching part of the work and the circulation of books outside of Philadelphia being borne by the Home Teaching Society.

The library of embossed books has been transferred to the Free Library, 1217-1221 Chestnut Street, Philadelphia, where the books are kept in a room especially set apart for the purposes of this work. The room is also open to the blind as a reading-room, and such persons are welcome to the free use of the library. Those who live in Philadelphia or its vicinity will be taught at their homes, without charge, by the visitors engaged by the Home Teaching Society for that special purpose.

An embossed alphabet and a first-lesson sheet will be forwarded upon application.

The Department for the Blind in the Free Library

of Philadelphia has a circulating library of over 1700 volumes in the five types most used: American Braille, Braille, Line letter, Moon, and New York Point. The books in Moon type belonging to the Pennsylvania Home Teaching Society may be sent as loans to blind readers throughout the United States. Applications for the loan of embossed books should be made to Mr. John Thomson, Librarian, Free Library of Philadelphia, 1217 Chestnut Street, Philadelphia, Pa.

The Chicago Public Library has about 800 volumes printed in Moon, in American Braille, and American Line. These books may be taken for home use. There is also a special room for blind readers in the main library, "but it is little used." The circulation is about 1500 volumes a year, chiefly through the delivery stations.

The San Francisco Public Library has no formal provision for the blind, but one of its rooms in the Phelan Branch Library, Fourth and Clara Streets, is occupied by an organization of ladies under the name of the Reading-room for the Blind.

Books in English Braille may be obtained from the British and Foreign Blind Association, 206 Great Portland Street, London, W.

The following is the list of all the institutions for the blind in the various states. One can obtain information about books and appliances in each city by writing to the institution named.

Alabama	Talladega	Academy for the Blind School for Negro Deaf-mutes and Blind
Arkansas	Little Rock	School for the Blind
California	Berkeley	Institution for the Education of Deaf, Dumb, and Blind
Colorado	Colorado Springs	School for the Deaf and Blind
Connecticut	Hartford	Nursery and Kindergarten for Blind
Florida	St. Augustine	Institution for Deaf and Blind
Georgia	Macon	Academy for the Blind
Illinois	Jacksonville	Institution for the Education of the Blind
Indiana	Indianapolis	Institute for the Education of Blind
Indian Territory	Fort Gibson	International School for Blind
Iowa	Vinton	College for the Blind
Kansas	Kansas City	Institution for the Education of the Blind
Kentucky	Louisville	Institution for the Education of the Blind
Louisiana	Baton Rouge	Institution for the Blind
Maryland	Baltimore	School for the Colored Blind and Deaf-mutes
Massachusetts	Boston	Perkins Institute for the Blind Association for promoting the Interests of the Adult Blind.—Agent, C. F. F. Campbell, Broadway, Cambridge, Mass.

APPENDIX

Michigan	Lansing	School for the Blind
Minnesota	Faribault	School for the Blind
Mississippi	Jackson	Institute for the Blind
Missouri	St. Louis	School for the Blind
Montana	Boulder	School for the Deaf and Blind
Nebraska	Nebraska City	Institution for the Blind
New Mexico	Santa Fé	Institution for the Deaf, Dumb, and Blind
New York	Batavia	State School for the Blind
	New York City	Institution for the Blind
North Carolina	Raleigh	Institution for the Deaf, Dumb, and Blind
Ohio	Columbus	Institution for the Education of Blind
Oklahoma Territory	Guthrie	Institution for the Deaf, Dumb, and Blind
Oregon	Salem	Institute for the Blind
Pennsylvania	Philadelphia	Institution for the Blind
	Pittsburg	Institution for the Blind
South Carolina	Cedar Springs	Institution for the Education of the Deaf, Dumb, and Blind
South Dakota	Gary	"A School"
Tennessee	Nashville	School for the Blind
Texas	Austin	Institution for the Blind
		Institution for the Deaf, Dumb, and the Blind Colored Youth
Utah	Ogden	University of Utah—Department for Blind
Virginia	Staunton	Institution for the Education of the Deaf, Dumb, and Blind
Washington	Vancouver	School for Defective Youth

West Virginia	Romney	School for the Deaf and Blind
Wisconsin	Janesville	School for the Blind
Wyoming	Cheyenne	Institution for the Blind and Deaf and Dumb

Massachusetts is the only state which has yet taken up the interests of those who have become blind after the years of childhood. The Massachusetts Association for Promoting the Interests of the Adult Blind was established in 1903, with the object of helping the adult blind to help themselves. While awaiting the final report of a state commission appointed as a result of its labors by the governor "to investigate the condition of the adult blind," the Association has continued its work of giving and receiving information as to the needs and capabilities of the blind; and has established an experiment station to find and test industries and processes which seem practicable for the blind.

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